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Preface

To assess and improve the nutritional status of the population, data about the energy and nutrient content of composite foods are necessary because a large proportion of the food consumed is cooked or prepared. As the majority of nutrient databases provide information mainly on the nutrient composition of raw foods, continued efforts have been made by several countries all over the world to update and harmonise the food composition databases and to include the nutrient composition of cooked and prepared foods [3].

The chemical analysis of cooked foods (dishes) involves high costs in terms of time and money and cannot be applied in practical situations e.g. epidemiological studies, institutional kitchens, private households. As it is virtually impossible to analyse every dish item and other prepared foods, calculation of the nutrient composition is still the method of choice.

Experimental results have shown that between the analytical and calculated content of nutrients in prepared foods maximum correspondence is achieved when calculations are based on the following data [1, 2, 3]:

a) Data of nutrient content per 100 g edible portion of raw ingredients [4].
b) Quantity of ingredients for preparation of 100 g edible portion of cooked food (dish) in the ready-to-serve condition.
c) Retention factors of food constituents during cooking.

Cookbook recipes usually fail to provide information about the quantities of food obtained after preparation. Therefore weight have to be measured or borrowed from the pertinent literature.
In part 1 of this study the algorithm used for determination of weight yield are described and tables of weight yield factors due to different cooking methods for about 700 foods and dishes are presented. The weight yield factors in the tables are based on data in the pertinent literature and on analytical results from our own studies [5-8, 10-11]. They can be used to help estimate weight yield after cooking similar foods and dishes.

In part 2 of this paper the formulae used for calculation and the tables of average retention factors of food constituents after cooking of about 39 typical food (dish) categories are contained.
The actual retention factors for protein, fat, carbohydrates, vitamins, minerals, cooking salt, sodium, potassium, magnesium, calcium, phosphorus and iron are statistically approved values. For some other food constituents, in particular niacin, biotin, folate, pantothenic acid, vitamin E , K and B_{12}, fatty acids, amino acids, cholesterol the retention data available are incomplete and should be regarded as estimated retention values. For any other food constituents, for which at present no data are available, using a retention factor of 1.0 is preliminarily recommended.

Using fat as cooking medium e.g. in frying pan or deep fryers for cooking of breaded meat , fish filet etc., fat uptake in gram per 100 g initial food ingredient is also indicated.
Factors for cooking salt absorption during boiling and steaming of foodstuffs are also given in the tables.
The average retention factors in the tables are calculated on the basis of on data in the current literature [5-9] and on analytical results from unpublished studies [11].

Since cooking procedures of foods , as far as temperature and time are concerned, are more or less similar in all European countries, the presented retention factors may be used as basic data to calculate the nutrient composition of dishes. This would also considerably improve the compatibility of the different nutrient databases for cooked foods and dishes.
It is also of great importance that the data set for nutrient retention factors be further developed and extended to other countries.

In industrial food processing cooking conditions are frequently different from household and large kitchen cooking. Food manufacturers should therefore determine retention factors of food constituents for each product by analysis and using the algorithm described in paragraph 2.

Examples and algorithms for converting a base recipe to a 100 g edible portion dish in ready-to-serve condition and for calculation of the nutrient content per 100 g dish are described and illustrated in appendix A and B. Information about the cooking methods used are contained in appendix C.

With the publication of the present work my special thanks go to S. Dieterich (Federal Research Centre for Nutrition in Karlsruhe) for helping to create and correct the tables, to L. Bergström (Uppsala) and Dr. I. Martins (Lisbon) for valuable contributions and providing data, to Prof. Dr. B. Tauscher (Head of Federal Research Centre Karlsruhe) for support and Dr. E. Kirchhoff (Deutsche Forschungsantalt für Lebensmittelchemie, Garching) for reviewing the text and tables.

Dir. and Professor Antal Bognar

Part 1: Weight yield by cooking of food and dish

I. Determination

The preparation of food by heat processing in particular by cooking may lead to essential changes in weight and nutrient content. The extent of changes depend on many factors as e.g. the kind of ingredients, cooking method, equipment, temperature and time.

Main effect of dish preparation by cooking on weight yield can be shared in the following groups:

- preparation connected with an increase of the water content of a product for example, boiling, stewing of rice or legume.
- preparation connected with a reduction of the water content of a product for example, frying of meat, baking of bread .
- preparation connected with a fat uptake and reduction of the water content of a product for example, deep frying of potato.

Dry food as e.g. rice, pasta, legumes need a certain amount of water to obtain the common ready-to-eat condition. Additional water is needed to compensate the evaporation loss during cooking. Experimental data have shown that the water uptake by these foods is a linearly function of the food quantity, while the evaporation loss depends on other, non-predictable factors as e.g. the cooking equipment, the kind and size of the cooking pots, temperature and time [5-7,10].

Gravy, soup and pot-au-feu, for example, are supposed to show a certain consistence after cooking which is achieved by supplementing the water lost by evaporation, or by the evaporation of excess water. It is, therefore, **not advisable** to include the water quantities used into the ground recipe, as they are a source of inaccuracy.

This will be exemplified by the preparation of *risotto*: for 500 g and 2000 g of ready-to-serve *risotto*, ca. 167 g and 667 g rice (long corn, polished) and ca. 495 and 1500 g of water respectively are needed. During cooking (cooking time about 16 min) in a 4 l pot with cover, about 160 g of water evaporate in either case. If the water quantities are taken into account, the weight yield factors would be ~ 0.76 and ~ 0.92, respectively, while, if the water is not taken into account, the weight yield factor is 3.00 in each case.

By using fat as cooking medium (e.g. frying in pan, deep frying) the fat absorption of the food is regarded. Quantities of absorbed fat (fat uptake) should also be included into the ground recipe. It can ether be analysed (calculation see below) or borrowed from enclosed tables on nutrient retention factors.

By using cooking salt, e.g. for seasoning in boiling water, the total quantity of added salt have to be included into the recipe. Factors of sodium chloride absorption during cooking of foodstuffs are also performed in tables on nutrient retention factors.

For food still containing the waste after preparation (e.g. chicken, boiled egg) two weight yield factors are necessary, one for the food including waste and one without waste (edible part). Waste arising from preparation (peeling ,cleaning, washing etc.) of the initial raw material is not included into these calculations. For dishes consisting of liquid and solid parts (e.g. meat plus gravy) yield factors for liquid and solid parts are required.

The factors refer to the ready-to-cook food ingredients without water for boiling, steaming, stewing and without fat for frying.

If several recipes were available for similar dishes, an average recipe was created.

The data were evaluated statistically according to usual formulae to calculate main value and the range of variation ($p = 0.05$). The number of available data for the calculation of main values is also included in the tables.

A file about 450 typical German recipes can be obtained by Bognár (Federal Research Centre for Nutrition in Karlsruhe) on disc or as hard copy upon request.

The yield factors for weight contained in tables were calculated by using formulae described below. They may also be used for the calculation of the weight yield factors by industrial preparation of food.

Weight yield factor of dish *k*, including waste, prepared by method *p* ($d_{(k,\,p)}$):

$$d_{(k,p)} = \frac{V_{(k,p)}}{U_{(k)}} \tag{1}$$

Weight yield factor of dish *k*, edible part, prepared by method *p* ($e_{(k,\,p)}$):

$$e_{(k,p)} = \frac{Z_{(k,p)}}{U_{(k)}} \tag{2}$$

Weight yield factor of solid part *f* of dish *k*, including waste, prepared by method *p* ($d_{(f,\,k,\,p)}$) :

$$d_{(f,k,p)} = \frac{V_{(f,k,p)}}{U_{(k)}} \tag{3}$$

Weight yield factor of solid part *f* of dish *k*, edible part, prepared by method *p* ($e_{(f,\,k,\,p)}$):

$$e_{(f,k,p)} = \frac{Z_{(f,k,p)}}{U_{(k)}} \tag{4}$$

Weight yield factor of liquid part *s* of dish *k*, including waste, prepared by method *p* ($d_{(s,\,k,\,p)}$):

$$d_{(s,k,p)} = \frac{V_{(s,k,p)}}{U_{(k)}} \tag{5}$$

Weight yield factor of liquid part *s* of dish *k*, edible part, prepared by method *p* ($e_{(s,\,k,\,p)}$):

$$e_{(s,k,p)} = \frac{Z_{(s,k,p)}}{U_{(k)}} \tag{6}$$

where:

$V_{(k,\,p)}$ quantity of dish *k*, including waste, prepared by method *p* in gram
$V_{(f,\,k,\,p)}$ quantity of solid part *f* of dish *k*, including waste , prepared by method *p* in gram
$V_{(s,\,k,\,p)}$ quantity of liquid part *s* of dish *k* , including waste, prepared by method *p* in gram
$Z_{(k,\,p)}$ quantity of dish *k*, edible part, prepared by method *p* in gram
$Z_{(f,\,k,\,p)}$ quantity of solid part *f* of dish *k*, edible part, prepared by method *p* in gram
$Z_{(s,\,k,\,p)}$ quantity of liquid part *s* of dish *k*, edible part, after preparation by method *p* in gram
$U_{(k)}$ total quantity of ingredients (ready-to-cook) without cooking medium (water, fat) according to the base recipe of dish *k* in gram

$$U_{(k)} = \sum_{i=1}^{n} u_{(i,k)} \tag{7}$$

$u_{(i,\,k)}$ quantity of ingredient *i* according to the base recipe for dish *k* in gram
n number of ingredients in recipe *k*

Tables on weight yield factors by cooking of foods and dishes

Table 1: Weight yield factors by cooking of **milk and milk product** based dishes

Kind of food, dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Chocolate blancmange	FR m.Z	a	-	-	0.95	0.02	3
Vanilla blancmange	FR m.Z	a	-	-	0.95	0.02	3
Cheese soufflé	FR m.Z	e	-	-	0.95	0.02	3
Soft cheese soufflé with apples	FR m.Z	e	-	-	0.94	0.02	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew;
d = fry in pan with fat; e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m = mix
m.Z = with ingredients, common German recipe

Table 2: Weight yield factors by cooking of **egg** based dishes

Kind of food, dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Egg, boiled	FR o.Z	a	1.01	0.01	0.90	0.01	10
Egg in mustard sauce	FR m.Z	m	-	-	1.00	-	-
- , egg part			-	-	0.40	-	-
- , sauce part			-	-	0.60	-	-
Egg in vegetable sauce	FR m.Z	m	-	-	1.00	-	-
- , egg part			-	-	0.40	-	-
- , sauce part			-	-	0.60	-	-
Scrambled eggs	FR m.Z	d	-	-	0.91	0.04	6
Scrambled eggs with ham	FR m.Z	d	-	-	0.90	0.04	6
Fried egg	FR m.Z	d	-	-	0.87	0.03	5
Rich pancake pieces	FR m.Z	d	-	-	1.01	0.03	11
Pancake with white flour	FR m.Z	d	-	-	0.89	0.03	10
Pancake with whole meal flour	FR m.Z	d	-	-	0.89	0.03	10

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m = mix
m.Z = with ingredients, common German recipe; o.Z = without any ingredients;

Table 3: Weight yield factors by cooking of meat based dishes

- veal -

Kind of food, dish	Raw product	Cooking	Core Temperature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Veal [1) 2)] (shoulder, leg, breast), boiled	FR o.Z	a	~ 95	-	-	0.70	0.03	6
Fricassee [2)] of veal with sauce	FR m.Z	a	~ 90	-	-	1.20	-	1
- , meat part				-	-	0.39	-	1
- , sauce part				-	-	0.81	-	1
Pot roast veal [2)] (shoulder) small pieces, with gravy	FR m.Z	s	~ 80	-	-	1.20	0.02	3
- , meat part				-	-	0.40	0.02	3
- , sauce part				-	-	0.80	0.02	3
Roast veal [1)] (breast, leg, shoulder)	FR m.S	e	> 80	-	-	0.67	0.04	11
Roast veal [1)] (breast, leg, shoulder)	FR m.S	g	~ 75	-	-	0.75	0.04	6
Pot roast veal [1)] (breast, leg, shoulder)	FR m.S	s	> 80	-	-	0.68	0.04	8
Roast and pot roast veal [1)] (leg, shoulder), with juice	FR m.Z	e/s	> 80	-	-	1.04	0.02	4
- , meat part				-	-	0.64	0.02	4
- , juice part				-	-	0.40	0.02	4
Roast and pot roast veal [1)] (leg, shoulder), with gravy	FR m.Z	e/s	~ 80	-	-	0.86	0.02	2
- , meat part				-	-	0.43	0.02	2
- , gravy part				-	-	0.43	0.02	2
Escallop of veal [2)] (chop, leg, shoulder), natural	FR m.F	d/g	~ 80	-	-	0.74	0.03	6
Escallop of veal [2)] (chop, leg, shoulder), breaded	FR m.F	d/f	~ 80	-	-	0.74	0.03	5

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1)] = big piece (> 0.5 kg, high > 2.5 cm); [2)] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat; e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients, common German recipe;
o.Z = without any ingredients; m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 4: Weight yield factor by cooking of meat based dishes

- beef -

Kind of food, dish	Raw product	Coo-king	Core Tempe-rature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Beef [1) 2)] (brisket, shoulder, top round), boiled	FR o.Z	a	~ 95	-	-	0.60	0.03	12
Roast beef [1)] (chuck, leg, shoulder, top round), rare	FR m.F	e/g	55-65	-	-	0.78	0.03	11
Roast beef [1)] (chuck, leg, shoulder, top round), medium	FR m.F	e/g	66-75	-	-	0.72	0.05	21
Roast beef [1)] (chuck, leg, shoulder, top round), well done	FR m.F	e/g	76-95	-	-	0.62	0.05	18
Pot roast beef [1)] (chuck, leg, shoulder, top round), rare	FR m.F	s	55-65	-	-	0.75	0.02	9
Pot roast beef [1)] (chuck, leg, shoulder, top round), medium	FR m.F	s	66-75	-	-	0.71	0.04	17
Pot roast beef [1)] (chuck, leg, shoulder, top round), well done	FR m.F	s	76-85	-	-	0.65	0.04	20
Roast beef [1)] (chuck, leg, shoulder, top round), well done	FR m.F	e	~ 90	-	-	0.56	0.03	7
Roast beef [1)] (chuck, leg, shoulder), with juice, medium	FR m.Z	e	66-75	-	-	1.14	-	1
- , meat part				-	-	0.71	-	1
- , juice part				-	-	0.43	-	1
Roast beef [1)] (chuck, leg, shoulder), with juice, well done	FR m.Z	e	~ 90	-	-	0.88	0.02	4
- , meat part				-	-	0.55	0.02	4
- , juice part				-	-	0.33	0.02	4
Pot roast beef [1)] (leg, shoulder), with juice, medium	FR m.Z	s	66-75	-	-	1.12	-	1
- , meat part				-	-	0.70	-	1
- , juice part				-	-	0.42	-	1
Pot roast beef [1)] (leg, shoulder), with juice, well done	FR m.Z	s	~ 90	-	-	1.01	0.03	4
- , meat part				-	-	0.62	0.03	4
- , juice part				-	-	0.37	0.03	4
Pot roast beef [1)] (chuck, leg, shoulder), with gravy	FR m.Z	e/s	66-75	-	-	1.17	0.02	2
- , meat part, well done				-	-	0.57	0.02	2
- , juice part				-	-	0.60	0.01	1

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1)] = big piece (> 0.5 kg, high > 2.5 cm); [2)] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat; e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients, common German recipe;
o.Z = without any ingredients; m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 5 : Weight yield factors by cooking of meat based dishes

- beef, continuation -

Kind of food, dish	Raw product	cooking	Core Temperature °C	Yield factor				n
				with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
				$\bar{x}$	±	$\bar{x}$	±	
Pot roast beef [1] (chuck, leg, shoulder), with gravy	FR m.Z	e/s	~ 90	-	-	1.08	0.05	3
- , meat part, well done				-	-	0.48	0.05	3
- , juice part				-	-	0.60	0.04	3
Rumpsteak [2] (chop, rump), medium	FR m.S	d	66-75	0.78	0.02	0.65	0.02	3
Rumpsteak [2] (chop, rump), well done	FR m.S	d	~ 90	0.73	0.02	0.60	0.02	3
Roast beef [1] (sirloin), rare	FR m.F	e/g	55-65	-	-	0.83	0.03	3
Roast beef [1] (sirloin), medium	FR m.F	e/g	66-75	-	-	0.75	0.04	9
Roast beef [1] (sirloin), well done	FR m.F	e/g	76-85	-	-	0.69	0.03	2
Pot roast beef [2] (sirloin), with gravy, medium	FR m.Z	d/s	66-75	-	-	0.99	-	1
- , meat part				-	-	0.45	-	1
- , gravy part				-	-	0.45	-	1
Pot roast beef [2] (sirloin), with gravy, well done	FR m.Z	d/s	76-85	-	-	0.87	-	1
- , meat part				-	-	0.42	-	1
- , gravy part				-	-	0.45	-	1
Steak [2] (beef, chuck, shoulder, sirloin), rare	FR m. F	d	55-65	-	-	0.82	-	1
Steak [2] (beef, chuck, shoulder, sirloin), medium	FR m.F	d	66-75	-	-	0.73	-	1
Steak [2] (beef, chuck, shoulder, sirloin), well done	FR m.F	d	76-85	-	-	0.63	-	1
Beef [2] (chuck, shoulder), goulash	FR m.Z	s	~ 90	-	-	0.73	0.02	3
- , meat part				-	-	0.35	0.02	3
- , sauce part				-	-	0.38	0.02	3
Beef olive [2] (top round), with gravy	FR m.Z	s	~ 90	-	-	0.94	0.02	3
- , meat part				-	-	0.47	0.02	3
- , gravy part				-	-	0.47	0.02	3
Spiced vinegar marinated beef [2] (chuck), with gravy	FR m.Z	s	~ 90	-	-	0.79	0.02	3
- , meat part				-	-	0.29	0.02	3
- , gravy part				-	-	0.50	0.02	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1] = big piece (> 0.5 kg, high > 2.5 cm); [2] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat; e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients , common German recipe;
o.Z = without any ingredients; m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 6: Weight yield factors by cooking of meat based dishes

- pork -

Kind of food, dish	Raw product	Coo-king	Core Tempra-ture °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Pork [1) 2)](chuck, neck shoulder), boiled	FR o.Z	a	~ 95	-	-	0.65	0.05	15
Pork [1) 2)] (leg), boiled	FR o.Z	a	~ 95	-	-	0.60	0.03	3
Roast pork [1)] (leg,(neck, shoulder), rare	FR o.Z	e/g	60-69	-	-	0.84	0.05	2
Roast pork [1)] (leg, neck, shoulder), medium	FR o.Z	e/g	70-79	-	-	0.79	0.05	5
Roast pork [1)] (leg, neck, shoulder), well done	FR o.Z	e/g	80-90	-	-	0.72	0.02	6
Roast pork [1)] (leg, neck, shoulder), well done	FR o.Z	e/g	> 90	-	-	0.62	0.03	12
Pot roast pork [1)] (leg, neck, shoulder)	FR o.Z	s	70-79	-	-	0.82	0.05	6
Pot roast pork [1)] (leg, neck, shoulder)	FR o.Z	s	80-89	-	-	0.70	0.03	10
Pot roast pork [1)] (leg, neck, shoulder)	FR o.Z	s	> 90	-	-	0.66	0.04	2
Roast pork (neck, shoulder), with juice	FR m.Z	e	>85	-	-	1.08	0.03	12
- , meat part				-	-	0.68	0.03	12
- , juice part				-	-	0.40	0.02	12
Pot roast pork [1)] (neck, shoulder), with gravy,	FR m.Z	s	> 85	-	-	1.17	0.03	6
- , meat part				-	-	0.52	0.02	6
- , juice part				-	-	0.65	0.02	6
Roast Pork belly [2)], with skin	FR m.Z	d/g	> 85	0.77	0.03	0.52	0.02	3
Roast pork fillet [2)]	FR m.F	d/e	70-79	-	-	0.78	-	1
Roast pork fillet [2)]	FR m.F	d/e	80-89	-	-	0.72	-	1
Pot roast pork fillet [2)], with sauce	FR m.Z	s	70-75	-	-	0.98	0.02	2
- , meat part				-	-	0.49	0.02	2
- , sauce part				-	-	0.49	0.02	2
Pork escallop [2)] (leg) ,fried in pan	FR m.F	d	~ 85	-	-	0.65	0.02	3
Pork escallop [2)] (neck, shoulder), fried in pan	FR m.F	d	~ 85	-	-	0.68	0.02	21
Pork escallop [2)] (neck, shoulder), deep fried	FR m.S	g	~ 85	-	-	0.70	0.03	3
Pork escallop [2)] (leg), breaded ,fried	FR m.Z	d/f	~ 85	-	-	0.74	0.02	6
Pork escallop [2)] (neck, shoulder), breaded.fried	FR m.Z	d/f	~ 85	-	-	0.78	0.02	12
Pork chop [2)], with bone, fried	FR m.F	d	~ 85	0.70	0.03	0.57	0.03	3
Pork chop [2)], boneless , fried	FR m.F	d	~ 85	-	-	0.65	0.02	3
Pork chop [2)], with bone, breaded ,fried	FR m.Z	d/f	~ 85	0.80	0.04	0.66	0.04	2
Pork chop [2)], boneless, breaded ,fried	FR m.Z	d/f	~ 85	-	-	0.76	0.02	2
Pork [2)] (chuck, neck) goulash , with sauce ,braised	FR m.Z	s	~ 95	-	-	0.92	0.02	2
- , meat part				-	-	0.43	0.02	2
- , sauce part				-	-	0.49	0.02	2
Pork [2)] (chuck, neck) kebab , with sauce , braised	FR m.Z	s	~ 95	-	-	1.00	0.02	10
- , meat part				-	-	0.56	0.02	10
- , sauce part				-	-	0.44	0.02	10

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1)] = big piece (> 0.5 kg, high > 2.5 cm); [2)] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat; e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients, common German recipe;
o.Z = without any ingredients; m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 7: Weight yield factors by cooking of minced meat based dishes

- beef and pork, mixture -

Kind of food, dish	Raw product	Cooking	Core Temperature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	Edible part ($e_{(k,p)}$) $\bar{x}$	±	
Small meat ball [2], boiled	FR m.Z	a	~ 90	-	-	0.87	0.02	3
Minced meat loaf [2] with cheese, pan fried	FR m.Z	d	~ 85	-	-	0.90	0.02	5
Meat balls containing salt herring and capers, with sauce	FR m.Z	a	~ 90	-	-	1.50	0.03	3
- , meatballs part				-	-	0.65	0.02	3
- , sauce part				-	-	0.65	0.03	3
Roast forcemeat ball [2] (cevapcici), pan fried	FR m.F	d	~ 90	-	-	0.81	0.02	10
Roast forcemeat ball [2] (cevapcici), deep fried	FR m.F	f	~ 90	-	-	0.77	0.02	10
Rissole, burger [2], pan fried	FR m.F	d	~ 90	-	-	0.81	0.02	10
Rissole, burger [2], deep fried	FR m.F	f	~ 90	-	-	0.78	0.02	10
Rissole, burger [2], prepared with "Hackfix", pan fried	FR m.F	d	90	-	-	0.87	0.01	10
Rissole, burger [2], prepared with "Hackfix", deep fried	FR m.F	f	~ 90	-	-	0.84	0.02	12
Roast meat loaf [1]	FR m.Z	e	~ 85	-	-	0.79	0.02	5
Roast meat loaf [1], with juice	FR m.Z	e	~ 85	-	-	0.87	0.02	5
- , meat part				-	-	0.79	0.02	5
- , juice part				-	-	0.08	0.01	5
Pot roast meat loaf [1], with sauce	FR m.Z	s	~ 85	-	-	1.39	0.02	3
- , meat part				-	-	0.77	0.02	3
- , sauce part				-	-	0.62	0.02	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1] = big piece (> 0.5 kg, high > 2.5 cm); [2] = small piece (20-500 g, high < 2.5 cm);
[3] =Hackfix" ; a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients, common German recipe;
m.F = with ingredients and fat absorption, common German recipe

Table 8: Weight yield factors by cooking of meat based dishes

- lamb and mutton -

Kind of food, dish	Raw product	Coo-king-	Core Tempe-rature °C	Yield factor				n
				with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
				$\bar{x}$	±	$\bar{x}$	±	
Lamb, mutton (breast ,leg, shoulder)[1) 2)], with bones	FR/TK m.S	a	~ 95	0.63	0.04	0.48	0.05	14
Lamb, mutton (breast ,leg, shoulder) [1) 2)], boneless	FR/TK m.S	a	~ 95	-	-	0.57	0.04	3
Roast lamb, mutton (leg, shoulder) [1)], with bones	FR/TK m.S	e/g	55-65	0.90	-	0.74	-	1
Roast lamb, mutton (leg, shoulder) [1)], with bones	FR/TK m.S	e/g	70-80	0.71	0.02	0.56	0.02	17
Roast lamb, mutton (leg, shoulder) [1)], with bones	FR/TK m.S	e/g	> 90	0.64	-	0.49	-	1
Roast lamb, mutton (leg, shoulder) [1)], boneless	FR/TK m.S	e/g	70-80	-	-	0.76	0.03	4
Roast lamb, mutton (leg, shoulder) [1)], boneless	FR/TK m.S	e/g	> 90	-	-	0.57	0.03	4
Roast lamb, mutton (brisket) [2)], with bones	FR/TK m.S	e/g	70-80	0.78	0.03	0.66	0.03	2
Roast lamb, mutton (brisket) [2)], with bones	FR/TK m.S	e/g	> 90	0.63	0.03	0.48	0.03	2
Roast lamb, mutton (brisket) [2)], boneless	FR/TK m.S	e/g	70-80	-	-	0.76	0.03	4
Roast lamb, mutton (brisket) [2)], boneless	FR/TK m.S	e/g	> 90	-	-	0.57	0.03	4
Pot roast lamb, mutton (leg) [2)], with bones and gravy	FR/TK m.Z	s	~ 85	1.06	-	0.94	-	-
- , meat part				0.54	-	0.42	-	-
- , gravy part				0.52	-	0.52	-	-
Roast lamb chop [2)], small piece, with bones, natural	FR/TK m.F	d/g	~ 80	0.73	0.03	0.55	0.03	5

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1)] = big piece (> 0.5 kg, high > 2.5 cm); [2)] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat; e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients, common German recipe;
m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 9: Weight yield factors by cooking of poultry based dishes

- chicken, duck, goose, turkey -

Kind of food, dish	Raw product	Cooking	Core Temperature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Chicken, whole, boiled ,with skin	FR/TK m.S	a	~ 95	0.70	0.03	0.40	0.03	10
- , meat without skin				-	-	0.36	-	1
Fricassee of chicken, with sauce	FR m.Z	a	~ 95	-	-	0.90	0.02	3
- , meat part				-	-	0.37	0.01	3
- , sauce part				-	-	0.53	0.02	3
Roast chicken, whole or half, meat with skin	FR/TK m.S	e/g	~ 95	0.75	0.03	0.58	0.03	50
- , meat without skin				-	-	0.56	-	-
Chicken leg, meat with skin, fried	FR/TK m.F	d	~ 95	0.64	0.02	0.48	0.02	6
- , meat without skin				-	-	0.45	0.02	6
Chicken leg, breaded, deep fried	FR/TK m.F	f	~ 85	0.79	0.02	0.62	0.02	3
Escallop of chicken (breast), pan fried	FR/TK m.F	d	~90	-	-	0.80	0.02	3
Escallop of chicken (breast), deep fried	FR/TK m.F	f	~90	-	-	0.69	0.02	3
Escallop of chicken (breast), breaded, pan fried	FR/TK m.F	d	~ 90	-	-	0.86	0.02	3
Escallop of chicken (breast), breaded, deep fried	FR/TK m.F	f	~ 90	-	-	0.78	0.02	3
Roast duck, whole (~ 2 kg), meat with skin and fat	FR/TK m.S	e	~ 90	0.72	-	0,57	0.03	3
- , meat with skin				-	-	0.40	0.03	3
- , meat without skin				-	-	0.38	0.03	3
- , fat (melting)				-	-	0.17	0.03	3
Roast goose, whole (~ 4 kg), meat with skin and fat	FR/TK m.S	e	~ 90	0.75	0.05	0.58	0.05	3
- , meat with skin				-	-	0.41	0.03	3
- , meat without skin				-	-	0.31	0.05	3
- , fat (melting)				-	-	0.17	0.03	3
Turkey, whole (~ 4 kg), meat with skin and fat	FR/TK m.S	e	~ 85	0.75	0.02	0.61	0.02	19
- , meat with skin				-	-	0.57	0.02	-
- , meat without skin				-	-	0.55	0.02	-
- , fat (melting)				-	-	0.04	0.02	-
Roast turkey (leg), meat with skin	FR/TK m.S	e/g	~ 85	0.65	0.01	0.50	0.03	8
- , meat without skin	FR/TK m.S	e/g	~ 85	-	-	0.46	0.03	-
Escallop of turkey (breast), pan fried	FR m.F	d	~ 85	-	-	0.74	0.02	20
Escallop of turkey (breast), deep fried	FR m.F	f	~ 85	-	-	0.65	0.02	20
Escallop of turkey (breast), breaded, pan fried	FR/TK m.F	d	~ 85	-	-	0.80	0.03	20
Escallop of turkey (breast), breaded, deep fried	FR/TK m.F	f	~ 85	-	-	0.70	0.03	20

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; TK = deep frozen, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients, common German recipe;
m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 10: Weight yield factors by cooking of **game** based dishes

Kind of food, dish	Raw product	Cooking	Core Temperature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Roast hare (saddle, leg) [1]	FR/TK m.S	e	~ 80	0.77	0.05	0.57	0.05	3
Pot roast hare (saddle, leg) [1]	FR/TK m.S	s	~ 90	0.73	-	0.53	-	-
Pot roast hare(saddle, leg) [1], with gravy	FR/TK m.Z	s	~ 90	0.78	0.03	0.68	0.03	3
- , meat part				0.40	0.03	0.30	0.03	3
- , gravy part				-	-	0.38	0.03	3
Roast haunch [1] of venison	TK m.F	e/s	~ 90	0.63	0.04	0.48	0.04	2
Roast saddle [1] of venison	TK m.F	e/s	~ 90	0.73	-	0.43	-	-

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1] = big piece (> 0.5 kg, high > 2.5 cm); [2] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat; e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; m.Z = with ingredients, common German recipe;
m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 11: Weight yield factors by cooking of offal based dishes
- veal, beef , pork and poultry -

Kind of food, dish	Raw product	Cooking	Core Temperature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Heart [2] of beef, with sauce, braised	FR m.Z	s	~ 90	-	-	1.16	-	-
- , heart part				-	-	0.66	-	-
- , sauce part				-	-	0.50	-	-
Kidney [2] of pork, pan fried	FR m.F	d	~ 80	-	-	0.70	-	1
Kidney [2] of pork with sauce, braised	FR m.Z	s	~ 80	-	-	1.17	-	1
- , kidney part				-	-	0.51	-	1
- , sauce part				-	-	0.66	-	1
Liver [2] of beef, pan fried	FR m.F	d	~ 80	-	-	0.82	-	-
Liver [2] of pork and chicken, pan fried	FR m.F	d	~ 80	-	-	0.82	0.02	2
Liver [2] of beef, with sauce, "Berliner style", braised	FR m.Z	s	~ 80	-	-	1.29	0.02	3
- , liver part				-	-	0.77	0.02	3
- , sauce part				-	-	0.52	0.02	3
Tongue of veal [1], boiled	FR m.S	a	~ 90	-	-	0.80	-	-

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; [1] = big piece (> 0.5 kg, high > 2.5 cm); [2] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; d = fry in pan with fat; s = braise; m.Z = with ingredients, common German recipe;
m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 12: Weight yield factors by cooking of meat products based dishes

- sausage, meat loaf, cure bacon -

Kind of food, dish	Raw product	Coo-king	Core Tempe-rature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Escallop of meat loaf [2)] with cheese ,breaded, pan fried	FR m.F	d	~ 80	-	-	0.90	-	1
Meat loaf [2)] in slices, (Franfurter style), pan fried	FR o.Z	d	~ 80	-	-	0.90	0.01	3
Meat loaf [2)] in slices, (Franfurter style), deep fried	FR o.Z	f	~ 80	-	-	0.86	0.02	3
Meat loaf [2)] in slices, (Franfurter style), fried in oven	FR o.Z	e	~ 80	-	-	0.84	0.02	3
Mild cure bacon, with bones, boiled	FR o.Z	a	~ 80	0.84	-	0.65	-	1
Mild cure bacon, without bones, boiled	FR o.Z	a	~ 80	-	-	0.80	-	1
Frying sausage, raw,	FR o.Z	d/g	~ 80	-	-	0.80	0.02	10
- ,"Nürnberger style"	FR o.Z	d/g	~ 80	-	-	0.79	0.02	20
- , "Rheinische style"	FR m.F	d	~ 80	-	-	0.85	0.02	5
- , "Rote style"	FR m.F	d	~ 80	-	-	0.95	0.02	5
- , "Oberländer style"	FR m.F	d	~ 80	-	-	0.94	0.02	5
Scalding Sausage (Wiener-, Frankfurter)	VK o.Z	r	~ 80	-	-	1.03	0.02	8

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known; n = number of available data;
FR = fresh, raw; VK = canned; [1)] = big piece (> 0.5 kg, high > 2.5 cm); [2)] = small piece (20-500 g, high < 2.5 cm);
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise; r = heat; m.Z = with ingredients, common German recipe;
o.Z = without any ingredients; m.S = with salt and spice; m.F = with ingredients and fat absorption, common German recipe

Table 13: Weight yield factors by cooking of fish and fish products based dishes
- salt water fish and freshwater fish, crustaceans and molluscs -

Kind of food, dish	Raw Product	Coo-king	Core-Tempe-rature °C	Yield factor				n
				with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Carp blue (whole), boiled / steamed, with skin	FR/TK m.Z	a/b	~ 80	0.88	0.03	0.62	0.03	3
- ,without skin						0.56	0.03	3
Cod (whole), boiled	FR m.S	a	~ 90	0.75	0.03	0.51	0.03	5
Cod (whole), steamed	FR m.S	b	~ 80	0.93	0.03	0.57	0.03	5
Cod (whole), stewed	FR m.S	c	~ 80	0.80	0.02	0.57	0.03	5
Cod fillet, with sauce, stewed	FR m.Z	c	~ 80	-	-	1.60	0.03	2
- , fish part				-	-	0.67	0.03	2
- , sauce part				-	-	0.93	0.02	2
Fish fingers (pollack), breaded, pan fried	TK mF	d	~ 80	-	-	0.87	0.02	3
Fish fingers (pollack), breaded, fried in oven	TK o..Z	e	~ 80	-	-	0.88	0.02	3
Fish fingers (pollack), breaded, deep fried	TK m.F	f	~ 80	-	-	0.90	0.03	3
Fish, fillet, (cod, red fish, pollack), boiled	FR m.S	a	~ 80	-	-	0.77	-	-
Fish, fillet, (cod, pollack), steamed	FR m.S	b/c	~ 80	-	-	0.80	-	-
Fish, fillet, (cod, red fish, pollack), fried	FR m.S	d/f/g	~ 80	-	-	0.80	0.02	10
Fish fillet (cod, red fish, pollack), breaded, pan fried	FR/TK m.F	d	~ 80	-	-	0.78	0.04	5
fish fillet (cod, red fish, pollack), breaded, deep fried	FR/TK m.F	f	~ 80	-	-	0.80	0.03	5
Haddock (whole), stewed	FR m.S	c	-	0.85	-	0.45	-	-
Herring, green, breaded, pan fried	FR m.F	d	~ 80	-	-	0.83	0.02	2
Plaice (whole), stewed	FR m.S	c	-	0.85	-	0.45	-	-
Plaice (whole), breaded, pan fried	TK m.F	d	~ 80	-	-	0.81	0.03	3
Plaice (whole), breaded, deep fried	TK m.F	f	~ 80	-	-	0.83	0.03	3
Trout blue (whole), boiled / steamed , with skin	FR/TK m.Z	a/b	~ 80	0.88	0.03	0.62	0.05	5
- ,without skin						0.56	0.03	3
Trout, “Müllerin style”, pan fried	FR m.Z	d	~ 80	0.81	0.03	0.58	0.05	3
Crustaceans and molluscs, boiled	FR/TK m.S	a	~ 85	0.96	0.04	0.25	0.13	4
Shrimps, boiled	FR/TK m.S	a	~ 85	0.95	-	0.35	0.05	2
Lobster, boiled	FR/TK m.S	a	~ 85	0.95	-	0.29	-	1
Crawfish, boiled	FR/TK m.S	a	~ 85	0.95	-	0.16	-	1
Mussel, boiled	FR m.S	a	~ 90	1.00	-	0.20	-	-
Scampi, breaded, pan fried	FR/TK m.F	d	~ 80	-	-	0.78	-	1

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh product, raw; TK = deep frozen product, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; s = braise;
m.Z = with ingredients, common German recipe; o.Z = without any ingredients; m.S = with salt and spice;
m.F = with ingredients and fat absorption, common German recipe

Table 14: Weight yield factors by cooking of **soups**

Kind of food, dish	Raw product	Coo-king	Yield factor				n
			with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Asparagus cream soup	TP o.Z	a*	-	-	14.40	0.35	2
Beef, shoulder, brisket, with soup	FR m.Z	a	1.37	0.03	1,32	0.03	2
- , meat part	FR m.Z	a	-	-	0.55	0.03	2
- , soup part	FR m.Z	a	-	-	0.77	0.03	2
Beef bouillon	TP o.Z	a*	-	-	46.30	-	1
Cauliflower soup	TP o.Z	a*	-	-	14.30	0.43	2
Chicken (whole) soup with meat	FR/TK m.Z	a	1.70	0.03	1.53	0.03	2
- , meat with skin part		a	0.71	-	0.57	0.02	2
- , soup with fat (without fat)		a	0.99	-	(0.96	0.02)	2
Chicken bouillon	TP o.Z	a*	-	-	32.30	-	1
Chicken soup with noodles	FR m.Z	a	1.29	-	1.09	-	1
- , meat part			0.42	-	0.22	-	1
- , vegetable part			0.27	-	0.27	-	1
- , noodle part			0.24	-	0.24	-	1
- , liquid part			0.36	-	0.36	-	1
Chicken soup with noodles	TP o.Z	a*	-	-	16.00	-	1
Green bean soup	TP o.Z	a*	-	-	9.20	-	1
Goulash soup, boiled	FR m.Z	a	-	-	1.19	0.13	7
- , meat part			-	-	0.26	0.05	7
- , liquid and other part			-	-	0.93	0.06	7
Goulash soup	TP o .Z	a*	-	-	10.30	1.84	2
Mushroom cream soup	TP o.Z	a*	-	-	11.30	0.34	2
Oxtail soup	TP o.Z	a*	-	-	11.70	0.55	2
Pea soup with bacon	TP o.Z	a*	-	-	12.70	0.72	2
Tomato cream soup	TP o.Z	a*	-	-	10.40	0.71	2
Veal soup	TP o.Z	a*	-	-	12.70	0.05	2

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known ;
n = number of available data; FR = fresh, raw; TK = deep frozen, raw; TP = dried product; a = boil;
* = coo-king by instruction of producer; m.Z = with ingredients from common German recipe;
o.Z = without any ingredients;

Table 15: Weight yield factors by cooking of **gravies and sauces**

Kind of food, dish	Raw product	Coo-king	Yield factor				n
			with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Cream gravy	TP o.Z	a*	-	-	6.73	0.39	2
Curry sauce	TP o.Z	a*	-	-	7.42	0.65	2
Gravy (from bones)	FR m.Z	s	2.19	0.21	1.57	0.21	4
Gravy, simple	TP o.Z	a*	-	-	12.56	1.46	2
- , special	TP o.Z	a*	-	-	9.39	1.05	3
Light basis sauce	FR m.Z	a	-	-	5.81	0.02	2
Light basis sauce	TP o.Z	a*	-	-	8.98	1.70	2
Herbal sauce	TP o.Z	a*	-	-	8.04	0.05	2
Horseradish sauce	FR m.Z	a	-	-	0.90	0.02	6
Minced meat sauce “Bolognese style”	FR m.Z	s	-	-	1.17	0.05	6
Onion sauce	TP o.Z	a*	-	-	7.18	0.46	2
Paprika sauce	TP o.Z	a*	-	-	6.74	0.80	2
Pepper sauce	TP o.Z	a*	-	-	7.77	1.27	2
Sauce hunter's style	TP o.Z	a*	-	-	6.61	0.72	2
Tomato sauce	TP o.Z	a*	-	-	6.08	1.05	2
Vegetable sauce	FR m.Z	a	-	-	2.90	0.10	10

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data, for food group number of food; FR = fresh, raw; TP = dried product;
* = coo-kingred by instruction of producer; a = boil, s = braise; m.Z = with ingredients, common German recipe;
o.Z = without any ingredients;

Table 16: Weight yield factor by cooking of **stews**

Kind of food, dish	Raw product	Coo-king	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Bean stew	TR m.Z	a	-	-	2.03	0.10	3
(white or red beans)	VK m.Z	a	-	-	1.12	0.04	2
	TP o.Z	a*	-	-	6.71	-	1
Chicken soup pot	VK o.Z	r	-	-	0.99	0.00	2
Chilli con Carne	TR/FR m.Z	a	-	-	1.30	-	1
Cottage cheese soup with barley	TP o.Z	a*	-	-	7.35	-	1
Green bean stew with meat	FR/TK m.Z	a	-	-	1.06	0.09	3
Green bean stew with meat	VK o.Z	a	-	-	0.99	0.02	2
Green peas stew (peel peas)	TR m.Z	a*	-	-	1.82	-	1
Green peas stew (peel peas)	VK m.Z	r	-	-	1.12	0.03	1
Green peas stew (peel peas)	TP o.Z	a*	-	-	5.34	-	1
Green peas stew with bacon	TR m.Z	a	-	-	1.96	0.39	6
Lentil stew with bacon	TR m.Z	a	-	-	2.81	0.05	3
Lentil stew with bacon	VK o.Z	a	-	-	0.99	-	1
Lentil stew with bacon	TP o.Z	a*	-	-	4.68	0.27	2
Noodle stew with beef	TP	a*	-	-	6.51	-	1
Noodle stew with meat dumplings	TP	a*	-	-	7.21	-	1
Potato stew	FR m.Z	a	-	-	1.30	-	1
Potato stew	TP o.Z	a*	-	-	7.84	0.61	2
Vegetables “Pichelsteiner style”	VK o.Z	r	-	-	0.99	0.00	2
Vegetable stew with beef	FR/TK m.Z	a	-	-	0.87	0.05	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data, for food group number of food; FR = fresh, raw; TK = deep frozen, raw;
VK = canned product; TP = dried product; a = boil, pressure boil; r = heat; * = coo-kingred by instruction of producer;
m.Z = with ingredients, common German recipe; o.Z = without any ingredients;

Table 17: Weight yield factors by cooking of vegetables based dishes
- root, tuber and stem vegetables, without potatoes -

Kind of food group, food and dish	Raw product	Coo-king	Yield factor				n
			with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Asparagus, boiled, steamed	FR o.Z	a/b	-	-	1.00	0.00	2
Beetroots, with skin, boiled	FR m.S	a	1.04	0.03	0.83	0.03	45
Beetroots, with skin, steamed	FR m.S	b	1.00	0.02	0.80	0.02	2
Beetroots, without skin, stewed	FR m.Z	c	-	-	1.06	0.06	3
Carrot, boiled	FR/TK m.S	a	-	-	0.94	0.06	103
Carrot, steamed	FR/TK m.S	b	-	-	0.90	0.03	97
Carrot, stewed	FR m.S	c	-	-	0.96	0.01	18
Carrot, stew	FR m.Z	c	-	-	0.92	0.02	3
Carrot, stew	TK m.Z	c	-	-	0.98	0.03	3
Carrot, stew	VK m.Z	c	-	-	0.97	0.01	3
Carrot, with sauce	FR/TK m.Z	c	-	-	1.22	-	1
Celery, with skin, boiled	FR m.S	a	1.04	0.04	0.90	0.06	150
Celery, peeled, steamed	FR m.S	a	-	-	0.94	0.02	2
Celery, peeled, stewed	FR m.Z	c	-	-	1.11	0.05	3
Kohlrabi, peeled, boiled	FR/TK m.S	a	-	-	0.94	0.03	4
Kohlrabi, peeled, steamed	FR/TK m.S	b	-	-	0.90	0.04	5
Kohlrabi, peeled, stewed	FR/TK m.S	c	-	-	1.00	0.01	8
Kohlrabi, stew	FR/TK m.S	c	-	-	1.02	0.03	3
Kohlrabi, with sauce	FR/TK m.S	c	-	-	1.22	-	1
Leek, stew	FR m.Z	c	-	-	0.89	0.05	3
Leek, with sauce	FR m.Z	a	-	-	0.90	0.04	3
Onion, transparent, roasted	FR m.F	d	-	-	0.83	0.02	3
Onion, brown, roasted	FR m.F	d	-	-	0.42	0.03	3
Root and tuber vegetables, boiled	FR/TK m.S	a	-	-	0.95	0.02	4
Root and tuber vegetables, steamed	FR/TK m.S	b	-	-	0.90	0.02	2
Root and tuber vegetables, stewed	FR/TK m.S	c	-	-	1.02	0.17	3
Root and tuber vegetables, stew	FR/TK m.Z	c	-	-	0.97	0.13	3
Root and tuber vegetables, stew	VK m.Z	c	-	-	0.97	-	1
Root and tuber vegetables, with sauce	FR/TK m.Z	c	-	-	1.22	-	1

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data; FR = fresh, raw; TK = deep frozen, raw; VK= canned product;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan;
m.Z = with ingredients, common German recipe; o.Z = without any ingredients;
m.S = with salt and spice; m.F = with ingredients and fat uptake, common German recipe

Table 18: Weight yield factors by cooking of vegetables based dishes
- leafy vegetables -

Kind of food group, food and dish	Raw product	Coo-king	Yield factor				n
			with waste ($d_{(k,p)}$)		Edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Brussels sprouts, boiled	FR/TK o.Z	a	-	-	1.03	0.05	26
Brussels sprouts, steamed	FR/TK o.Z	b	-	-	1.04	0.02	38
Brussels sprouts, stewed	FR/TK o.Z	c	-	-	0.99	0.03	3
Brussels sprouts, stew	FR/TK m.Z	c	-	-	0.96	0.03	3
Brussels sprouts, with sauce	FR/TK m.Z	c	-	-	1.23	0.02	3
Chicory, stew	FR m.Z	c	-	-	0.97	0.05	3
Chinese cabbage, stew	FR m.Z	c	-	-	0.96	0.01	3
Green cabbage, boiled	FR/TK o.Z	a	-	-	1.15	0.18	2
Green cabbage, stew	FR/TK m.Z	c	-	-	1.02	0.09	2
Red cabbage, boiled	FR/VK o.Z	a	-	-	0.98	0.14	74
Red cabbage, stew	FR/VK m.Z	c	-	-	1.08	0.08	44
Red cabbage, with sauce	FR m.Z	c	-	-	1.15	-	1
Rhubarb, boiled	FR o.Z	a	-	-	0.94	0.01	23
Rhubarb, stewed	FR m.Z	c	-	-	1.11	-	1
Sauerkraut, boiled	FR/VK o.Z	a	-	-	0.92	0.07	22
Sauerkraut, stew	FR/VK m.Z	c	-	-	1.14	0.06	22
Savoy cabbage, boiled	FR o.Z	a	-	-	0.99	0.05	25
Savoy cabbage, steamed	FR o.Z	b	-	-	0.99	-	1
Savoy cabbage, stewed	FR o.Z	c	-	-	0.98	-	2
Savoy cabbage, stew	FR m.Z	c	-	-	0.92	0.14	3
Spinach, boiled	FR/TK o.Z	a	-	-	0.95	0.07	6
Spinach, steamed	FR/TK o.Z	b	-	-	0.76	0.02	4
Spinach, stewed	FR/TK o.Z	c	-	-	0.84	0.03	25
Spinach, stew	FR m.Z	c	-	-	0.81	0.05	11
Spinach, stew	TK m.Z	c	-	-	0.95	0.03	30
Spinach, with sauce	FR/TK m.Z	c	-	-	1.22	0.02	3
White cabbage, boiled	FR o.Z	a	-	-	0.98	0.02	124
White cabbage, steamed	FR o.Z	b	-	-	1.00	0.05	3
White cabbage, stewed	FR o.Z	c	-	-	0.93	0.11	3
White cabbage, stew	FR m.Z	c	-	-	1.03	0.06	9
Leafy vegetables, boiled	FR/TK o.Z	a	-	-	0.98	0.10	7
Leafy vegetables, steamed	FR/TK o.Z	b	-	-	0.99	0.11	4
Leafy vegetables, stewed	FR/TK o.Z	c	-	-	0.94	0.06	4
Leafy vegetables, stew	FR/TK m.Z	c	-	-	0.98	0.09	10
Leafy vegetables, with sauce	FR/TK m.Z	c	-	-	1.18	0.06	2

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data; FR = fresh, raw; TK = deep frozen, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew;
m.Z = with ingredients from common German recipe; o.Z = without any ingredients;

Table 19: Weight yield factors by cooking of vegetable based dishes
- flower and fruit vegetables -

Kind of food group, food and dish	Raw product	Coo-king	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Broccoli, boiled	FR m.S	a	-	-	1.11	0.02	3
Broccoli, steamed	FR m.S	b	-	-	1.04	0.02	3
Broccoli, stew	FR m.S	c	-	-	1.02	0.02	3
Cauliflower, boiled	FR/TK m.S	a	-	-	1.00	0.02	118
Cauliflower, steamed	FR/TK m.S	b	-	-	0.95	0.02	135
Cauliflower, stewed	FR/TK m.S	c	-	-	0.92	0.02	12
Cauliflower, with sauce	FR/TK m.Z	a	-	-	1.25	0.02	7
Egg-plants, stew	FR m.Z	c	-	-	0.80	0.05	3
Pumpkin (squash), boiled	FR m.S	a	-	-	0.92	0.10	4
Pumpkin (squash), stewed	FR m.S	c	-	-	1.13	0.07	5
Paprika, stew	FR m.Z	c	-	-	0.74	0.03	3
Zucchini, stew	FR m.Z	c	-	-	0.73	0.03	3
Flower vegetables, boiled	FR/TK m.S	a	-	-	1.06	0.05	2
Flower vegetables, steamed	FR/TK m.S	b	-	-	1.00	0.05	2
Flower vegetables, stewed	FR/TK m.S	c	-	-	0.92	0.02	2
Flower vegetables, stew	FR/TK m.Z	c	-	-	1.02	0.02	4
Flower vegetables, with sauce	FR/TK m.Z	c	-	-	1.25	0.02	1
Fruit vegetables, stew	FR m.Z	c	-	-	0.76	0.09	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data; FR = fresh , raw; TK = deep frozen, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew;
m.Z = with ingredients from common German recipe; o.Z = without any ingredients; m.S = with salt and spice;

Table 20: Weight yield factors by cooking of vegetable based dishes
- seed vegetables and legumes -

Kind of food group, food and dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Beans (white and red), boiled / stewed	TP m.S	a/c	-	-	2.50	0.10	10
Beans (white and red), with sauce	TP m.Z	c	-	-	2.58	0.05	3
Broad beans, boiled	TK m.S	a	-	-	0.92	0.02	2
Broad beans, steamed	TK m.S	b	-	-	1.02	0.01	2
Broad beans, stew	TK m.Z	c	-	-	0.93	0.02	2
Green beans, boiled	FR/TK m.S	a	-	-	0.93	0.02	120
Green beans, boiled	TP m.S	a	-	-	4.60	-	1
Green beans, heated	VK o.Z	r	-	-	0.95	0.01	7
Green beans, steamed	FR/TK m.S	b	-	-	0.91	0.02	96
Green beans, stewed	FR/TK m.S	c	-	-	0.93	0.02	55
Green beans, stew	FR/TK/VK m.Z	c	-	-	1.01	0.02	6
Green beans, with sauce	FR/TK/VK m.Z	c	-	-	1.64	0.03	6
Green peas, boiled	FR/TK m.S	a	-	-	0.89	0.03	48
Green peas, boiled	TP m.S	a	-	-	3.55	-	-
Green peas, heated	VK o.Z	r	-	-	0.94	0.02	2
Green peas, steamed	FR/TK m.S	b	-	-	0.87	0.02	59
Green peas, stewed	FR/TK m.S	c	-	-	0.92	0.02	9
Green peas, stew	FR/TK m.Z	c	-	-	1.03	0.02	6
Green peas, with sauce	FR/TK m.Z	c	-	-	1.64	0.03	6
Lentils, boiled /stewed	TP m.S	a/c	-	-	2.73	0.06	6
Lentils, stew	TP m.Z	c	-	-	2.81	-	1
Peas, boiled / stewed	TP m.S	a/c	-	-	2.45	0.17	6
Peas, stew	TP m.Z	c	-	-	2.53	-	1
Seed vegetables, boiled	FR/TK m.S	a	-	-	0.91	0.02	3
Seed vegetables, boiled	TP m.S	a	-	-	4.10	0.03	2
Seed vegetables, steamed	FR/TK m.S	b	-	-	0.88	0.02	3
Seed vegetables, stewed	FR/TK m.S	c	-	-	0.92	0.02	3
Seed vegetables, stew	FR/TK m.Z	c	-	-	0.99	0.08	3
Seed vegetables, with sauce	FR/TK m.Z	c	-	-	1.64	0.04	2

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data (in case of food group = number of food);
FR = fresh product, raw; TK = deep frozen product, raw; VK = canned product; TP = dried product;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; r = heat;
m.Z = with ingredients, common German recipe; o.Z = without any ingredients;
m.S = with salt and spice; m.F = with ingredients and fat uptake, common German recipe

Table 21: Weight yield factors by cooking of vegetable based dishes
- potato and potato products -

Kind of food and dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Potato, with peel, boiled	FR o.Z/m.S	a	0.98	0.01	0.80	0.02	86
Potato, with peel, steamed	FR o.Z/m.S	b	0.98	0.01	0.80	0.02	50
Potato, with peel, baked, barbecue	FR o.Z	e/g	0.81	0.03	0.68	0.03	4
Potato, without peel, boiled	FR o.Z/m.S	a	-	-	1.00	0.01	272
Potato, without peel, steamed	FR o.Z/m.S	b	-	-	0.98	0.01	242
Potato, without peel, stewed	FR o.Z/m.S	c	-	-	1.05	0.02	2
Potato puree, stewed	FR* m.Z	c	-	-	0.98	0.02	5
Potato puree, stewed	TP*	c	-	-	0.98	0.02	6
Potato dumpling, raw potatoes	FR m.Z/TP**	a	-	-	1.08	0.02	6
Potato dumpling, boiled potatoes	FR* m.Z /TP**	a	-	-	1.04	0.02	10
Potato dumpling, boiled potatoes	TK o.Z	a	-	-	1.03	0.02	3
Potato dumpling, half and half	TP **	a	-	-	1.06	0.02	20
Potato dumpling, half and half	TK o.Z	a	-	-	1.09	-	1
Potato croquette, deep fried	FR m.F /TP**	f	-	-	0.73	0.01	6
Potato croquette ,deep fried end baked	FR m.F /TP**	f/e	-	-	0.68	0.02	6
Potato dauphine , deep fried	TP** m.F	f	-	-	0.82	-	1
Potato pancake	TP** m.F	f	-	-	0.74	0.02	3
Potato pancake	TP** m.F	d	-	-	0.83	0.02	3
French fries	FR m.F	f	-	-	0.54	0.04	13
French fries	FR m.F	f/e	-	-	0.49	0.02	3
French fries	TK m.F	f	-	-	0.60	0.03	30
French fries	TK o.F	e	-	-	0.55	-	1
Fried potatoes “Rösti”	FR* m.F	d	-	-	0.72	0.02	3
Fried potatoes “Rösti”	TP** m.F	d	-	-	0.62	0.06	3
Fried potato patty	FR m.F	d	-	-	0.61	0.03	6
Fried potato patty	TK m.F	d	-	-	0.77	0.02	6
Fried potato patty	TP**m.F	d	-	-	0.73	0.02	6
Roasted potatoes	FR* m.F	d	-	-	0.77	0.02	3
Roasted potatoes	TP** m.F	d	-	-	0.72	0.02	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known
n = number of available data; FR = fresh, raw; FR* = fresh boiled potato; TK = deep frozen, raw; TP* = dried product; prepared by instruction of producer; TP** = dried product soaked, prepared by instruction of producer;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
e = fry in oven (hot air); f = deep fry; g = grill, broil, barbecue; m.Z = with ingredients, common German recipe;
o.Z = without any ingredients; m.S = with salt and spice, common German recipe

Table 22: Weight yield factors by cooking of vegetable based dishes
- mixed vegetable dishes -

Kind of food and dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Green pea and carrot, stewed	FR/TK o.Z	c	-	-	1.03	0.07	7
Green pea and carrot, heated	VK o..Z	r	-	-	0.95	-	-
Green pea and carrot, stew	FR/TK/VK m.Z	c	-	-	1.54	0.03	3
Paprika, filled	FR m.Z	c	-	-	0.79	0.03	3
Paprika, filled, with tomato sauce	FR m.Z	c	-	-	1.00	0.03	3
- , filled paprika part			-	-	0.67	0.03	3
- , tomato sauce part			-	-	0.33	0.02	3
Sauerkraut with mild cure bacon, with bone	FR m.Z	c	0.91	0.03	0.83	0.03	3
- , meat part			0.38	0.02	0.30	0.02	3
- , sauerkraut part			-	-	0.53	0.03	3
Sauerkraut with mild cure bacon, boneless	FR m.Z	c	-	-	0.89	-	1
- , meat			-	-	0.32	-	1
- , sauerkraut			-	-	0.57	-	1
Stuffed cabbage leaf, with sauce	FR m.Z	c	-	-	0.96	0.04	3
- , stuffed cabbage leaf part			-	-	0.50	0.04	3
- , sauce part			-	-	0.46	0.04	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data ; FR = fresh, raw; TK = deep frozen, raw; VK = canned product; TP = dried product;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; r = heat to eating temperature;
m.Z = with ingredients, common German recipe; o.Z = without any ingredients;

Table 23: Weight yield factors by preparation of **vegetable based juices**

Kind of juice	Raw product	Preparation	Yield factor				n
			with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Beetroots, juice	FR o.Z	C	-	-	0.50	-	-
Carrot, juice	FR o.Z	C	-	-	0.48	-	-
Potato (new), juice	FR o.Z	C	-	-	0.74	-	-
Potato (old), juice	FR o.Z	C	-	-	0.58	-	-
Radish, juice	FR o.Z	C	-	-	0.66	-	-
Rhubarb, juice	FR m.Z	D	-	-	0.69	-	-
Sauerkraut, juice	FR o.Z	C	-	-	0.19	-	-
Spinach, juice	FR o.Z	C	-	-	0.54	-	-
Tomatoes, juice	FR o.Z	C	-	-	0.68	-	-
Tomatoes, juice	FR o.Z	D	-	-	0.66	-	-

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data; FR = fresh, raw; C = prepared by juice centrifuge; D = prepared by steam;
o.Z = without any ingredients

Table 24: Weight yield factors by cooking of **mushrooms** based dishes

Kind of food group, food and dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Chanterelle, stew	FR m.Z	c	-	-	0.82	0.02	3
Mixed mushrooms, stew	FR m.Z	c	-	-	0.81	0.02	3
Mushroom, stew	FR m.Z	c	-	-	0.82	0.02	3
Mushroom, boiled	TP o.Z	a	-	-	1.75	-	-
Oyster mushrooms, stew	FR m.Z	c	-	-	0.82	0.02	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data; FR = fresh, raw; TK = deep frozen, raw; VK = canned product; TP = dried product;
a = boil, pressure boil; c = stew, pressure stew, microwave stew;
m.Z = with ingredients from common German recipe; o.Z = without any ingredients;

Table 25: Weight yield factors by cooking of fruit based dishes
- fruits with cores -

Kind of food group, food and dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Apple, stew	FR m.Z	a	-	-	1.51	-	-
- , fruit part			-	-	0.76	-	
- , liquid part			-	-	0.75	-	-
Apple, puree	FR m.Z	c	-	-	0.86	-	-
Apple, jelly	FR m.Z [1)]	c	-	-	0.87	-	-
Apple, jelly	FR m.Z[2)]	c	-	-	0.95	0.04	2
Apple, boiled	TP m..Z	a	-	-	4.00	-	-
Pear, stew	FR m.Z	a	-	-	1.15	-	-
- , fruit part	FR m.Z		-	-	0.77	-	-
- , liquid part	FR m.Z		-	-	0.78	-	-
Pear puree	FR m.Z	c	-	-	0.85	-	-
Quince, puree	FR m.Z	a	-	-	0.80	-	-
Quince, jelly	FR m.Z [1)]	a	-	-	0.83	-	-
Quince, jelly	FR m.Z[2)]	a	-	-	0.94	0.06	2
Quince, jam	FR m.Z[1)]	c	-	-	0.85	-	-
Pome fruits, stewed	FR m.Z	a	-	-	1.52	0.01	2
- , fruit part			-	-	0.77	0.01	2
- , liquid part			-	-	0.75	0.05	2
Pome fruits, puree	FR m.Z	c	-	-	0.84	0.04	3
Pome fruits, jelly	FR m.Z[1)]	c	-	-	0.85	0.02	2
Pome fruits, jelly	FR m.Z[2)]	c	-	-	0.95	0.04	2
Pome fruits, jam	FR m.Z[1)]	c	-	-	0.85	-	1
Pome fruits, boiled	TP m.Z	a	-	-	4.00	-	1

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data ; FR = fresh , raw; TK = deep frozen, raw; TP = dried product;
a = boil, pressure boil; c = stew, pressure stew, microwave stew; e = fry in oven (hot air); g = grill, broil, barbecue;
m.Z[1)] = common German recipe, ratio of fruit to sugar (1:1), cooking time > 5 minutes;
m.Z[2)] = common German recipe, ratio of fruit to sugar (2:1), cooking time < 5 minutes;

Table 26: Weight yield factors by cooking of fruit based dishes
- stone fruits -

Kind of food group, food and dish	Raw product	Cooking	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Apricot, without score, stew, boiled	FR m.Z	a	-	-	1.35	-	1
- , fruit part			-	-	0.80	-	1
- , liquid part			-	-	0.55	-	1
Apricot, without score, boiled	TP o.Z.	a	-	-	2.35	-	1
Apricot without score, jam	FR m.Z[1)]	c	-	-	0.85	-	1
Apricot without score, jam	FR m.Z[2)]	c	-	-	0.95	-	1
Cherries (sweet and sour), with score, stew	FR m.Z	a	1.33	0.04	1.22	0.44	5
- , fruit part			0.82	0.04	0.70	0.04	5
- , liquid part			-	-	0.52	0.03	5
Cherries (sweet and sour), without score, stewed	FR m.Z	c	-	-	0.87	0.03	5
Cherries (sweet and sour), without score, jam	FR m.Z[1)]	c	-	-	0.85	0.03	3
Cherries (sweet and sour), without score, jam	FR m.Z[2)]	c	-	-	0.95	0.02	3
Mirabelle plum, with score, stew, boiled	FR m.Z	a	1.32	-	1.21	-	-
- , fruit part			0.82	-	0.73	-	-
- , liquid part			-	-	0.48	-	-
Mirabelle plum, without score, stewed	FR m.Z	c	-	-	0.87	-	-
Mirabelle plum, without score, jam	FR m.Z[1)]	c	-	-	0.85	-	-
Mirabelle plum, without score, jam	FR m.Z[2)]	c	-	-	0.95	-	-
Plums, without score, stew, boiled	FR m.Z	a	-	-	1.17	-	-
- , fruit part			-	-	0.81	-	-
- , liquid part					0.36	-	-
Plums, without score, stewed	FR m.Z	c	-	-	0.90	-	-
- , jam	FR m.Z[1)]	c	-	-	0.80	-	-
- , jam	FR m.Z[2)]	c	-	-	0.95	-	-
Plums, without score, boiled	TP m.Z	a	-	-	1.85	-	-
Peaches, without score and skin, stew, boiled	FR m.Z	a	-	-	1.25	-	-
- , fruit			-	-	0.80	-	-
- , liquid part			-	-	0.45	-	-
Peaches, without score and skin, jam	FR m.Z[1)]	c	-	-	0.85	-	-
Peaches, without score and skin, jam	FR m.Z[2)]	c	-	-	0.95	-	-
Stone fruits, with score, stew, boiled	FR m.Z	a	-	-	1.22	0.01	2
- , fruit part			-	-	0.72	0.02	2
- , liquid part			-	-	0.50	0.02	2
Stone fruits, without score, stew, boiled	FR m.Z	a	-	-	1.21	0.10	3
- , fruit part			-	-	0.80	0.01	3
- , liquid part			-	-	0.45	0.10	3
Stone fruits, without score, stewed	FR m.Z	c	-	-	0.88	0.01	4
Stone fruits, without score, jam	FR m.Z[2)]	c	-	-	0.84	0.03	5
Stone fruits, without score, jam	FR m.Z[2)]	c	-	-	0.95	0.02	5

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05);- = not available or not known;
n = number of available data ; FR = fresh, raw; TK = deep frozen, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew; microwave stew;
m.Z[1)] = common German recipe, ratio of fruit to sugar (1:1), cooking time > 5 minutes;
m.Z[2)] = common German recipe, ratio of fruit to sugar (2:1), cooking time < 5 minutes;
m.Z = with ingredients, common German recipe; o.Z = without any ingredients;

Table 27: Weight yield factors during cooking of fruit based dishes
- berries, exotic and wild fruits -

Kind of food group, food and dish	Raw product	Cooking	Yield factor				n
			With waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Berries, stewed	FR m.Z	c	-	-	0.95	0.01	3
Berries, jam	FR,TK m.Z[1)]	c	-	-	0.86	0.02	5
Berries, jam	FR m.Z[2)]	c	-	-	0.93	0.03	5
Blackberry, stewed	FR m.Z	c	-	-	0.95	-	-
Blackberry, jam	FR,TK m.Z[1)]	c	-	-	0.80	-	-
Blackberry, jam	FR,TK m.Z[2)]	c	-	-	0.90	-	-
Currant, red and black, stewed	FR m.Z	c	-	-	0.95	-	-
Currant, red and black, jam	FR,TK m.Z[1)]	c	-	-	0.85	-	-
Currant, red and black, jam	FR,TK m.Z[2)]	c	-	-	0.95	0.02	3
Gooseberry, stew, boiled	FR m.Z	a	-	-	1.50	-	-
- , fruit part			-	-	0.75	-	-
- , liquid part			-	-	0.75	-	-
Gooseberry, stewed	FR,TK m.Z	c	-	-	0.90	-	-
Gooseberry, jam	FR,TK m.Z[1)]	c	-	-	0.85	-	-
Gooseberry, jam	FR,TK m.Z[2)]	c	-	-	0.95	-	-
Raspberry, stewed	FR m.Z	c	-	-	0.95	-	-
Raspberry, jam	FR,TK m.Z[1)]	c	-	-	0.86	-	-
Raspberry, jam	FR,TK m.Z[2)]	c	-	-	0.95	-	-
Strawberry, stewed	FR m.Z	c	-	-	0.95	0.02	3
Strawberry, jam	FR,TK m.Z[1)]	c	-	-	0.86	0.02	3
Strawberry, jam	FR m.Z[2)]	c	-	-	0.90	0.02	3
Exotic fruits (e.g. orange, Kiwi.), jam	FR m.Z	c	-	-	0.85	-	-
Wild fruits (e.g. elderberry), stew	FR,TK m.Z	c	-	-	0.90	-	-
Wild fruits (e.g. elderberry), jam	FR,TK m.Z[1)]	c	-	-	0.85	-	-
Wild fruits (e.g. elderberry), jam	FR,TK m.Z[2)]	c	-	-	0.95	-	-

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data; FR = fresh, raw; TK = deep frozen, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew;
m.Z[1)] = common German recipe, ratio of fruit to sugar (1:1), cooking time > 5 minutes;
m.Z[2)] = common German recipe, ratio of fruit to sugar (2:1), cooking time < 5 minutes;
m.Z = with ingredients, common German recipe;

Table 28: Weight yield factors by preparation of fruit based juices

Kind of juice	Raw product	Prepa-ration	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Apple juice	FR o.Z	C	-	-	0.70	-	-
Apple juice	FR m.Z	D	-	-	0.36	-	-
Pear juice	FR o.Z	C	-	-	0.54	-	-
Quince juice	FR m.Z	D	-	-	0.40	-	-
Cherry (sweet, sour), juice	FR o.Z	C	-	-	0.80	-	-
Cherry (sweet, sour), juice	FR m.Z	D	-	-	0.55	0.07	2
Plum, juice	FR m.Z	D	-	-	0.56	-	-
Currant (red, black), juice	FR o.Z	C	-	-	0.60	-	-
Currant (red, black), juice	FR m.Z	D	-	-	0.70	0.03	3
Raspberry, juice	FR o.Z	C	-	-	0.63	-	-
Blackberry, juice	FR o.Z	C	-	-	0.63	-	-
Blackberry, juice	FR m.Z	D	-	-	0.42	-	-
Gooseberry, juice	FR o.Z	C	-	-	0.50	-	-
Gooseberry, juice	FR m.Z	D	-	-	0.69	-	-
Grape, juice	FR o.Z	C	-	-	0.74	-	-
Orange, juice	FR o.Z	P	-	-	0.48	0.04	5
Grapefruit, juice	FR o.Z	P	-	-	0.46	0.03	4
Lemon, juice	FR o.Z	P	-	-	0.33	0.05	6

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05);- = not available or not known;
n = number of available data; FR = fresh, raw; C = prepared by juice centrifuge; D = prepared by steam;
P= prepared by lemon squeezer (electric); m.Z = with ingredients, common German recipe; o.Z = without any ingredients

Table 29: Weight yield factors by cooking of cereal based dishes
- grains and flakes -

Kind of food, dish	Raw product	Prepa-ration	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Amaranth, stewed	TR m.S	c	-	-	2.98	0.03	3
Barley, pearl, boiled	TR m.S	a	-	-	2.50	0.03	2
Buckwheat (shacked corn), boiled	TR m.S	a	-	-	3.60	0.05	3
Millet (shacked corn), boiled	TR m.S	a	-	-	2.40	0.02	3
Millet (shacked corn), stewed	TR m.S	c	-	-	2.40	0.02	3
Outs flakes, wholemeal	TR o.Z	a	-	-	4.10	0.10	2
Outs flakes, wholemeal with milk	TR m.Z	a	-	-	0.72	0.02	2
Quinoa, stewed	TR m.S	c	-	-	3.42	0.03	3
Rice, round corn, polished, boiled	TR m.S	a	-	-	3.19	0.43	8
Rice round corn, polished, pudding	TR m.Z	c	-	-	0.91	0.03	3
Rice, long corn, unpolished, boiled	TR m.S	a	-	-	2.60	0.32	7
Rice, long corn, unpolished ,stewed	TR m.S	c	-	-	2.60	0.32	5
Rice, long corn, unpolished, stew	TR m.F	c	-	-	2.61	0.03	2
Rice, long corn, parboiled, boiled	TR m.S	a	-	-	2.90	0.05	43
Rice, long corn, parboiled, stewed	TR m.S	c	-	-	3.04	0.10	11
Rice, long corn, parboiled, stew	TR m.F	c	-	-	2.89	0.03	3
Rice, long corn, polished, boiled	TR m.S	a	-	-	2.98	0.05	140
Rice, long corn, polished, stewed	TR m.S	c	-	-	2.94	0.09	25
Rice, long corn, polished, stew	TR m.F	c	-	-	2.97	0.03	3
Rice, long corn, polished, pre-cooked, boiled	TP m.Z	a	-	-	3.43	-	1
Risotto (rice, long corn, unpolished)	TR m.Z	c	-	-	2.66	0.03	3
Risotto (rice, long corn, parboiled)	TR	c	-	-	2.61	0.03	3
Risotto (rice, long corn, polished)	TR	c	-	-	2.83	0.15	16
Rice, long corn, polished, with pork, stew	FR m.Z	c	-	-	1.46	0.04	5
Spelt, grain, without husk, boiled	TR m.S	a	-	-	1.80	0.05	2
Spelt, grain, without husk, stewed	TR m.S	c	-	-	1.80	0.05	2
Wheat, whole, boiled / stewed	TR m.S	a/c	-	-	1.78	0.05	6
Wheat, wholemeal, roasted	TR m.F	d	-	-	0.78	0.02	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05);- = not available or not known;
n = number of available data; FR = fresh, raw; TR = dried, raw; TP = dry product;
a = boil, pressure boil; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
m.Z = with ingredients, common German recipe; o.Z = without any ingredients;
m.S = with salt and spice; m.F = with ingredients and fat uptake, common German recipe

Table 30: Weight yield factors during cooking of cereal based dishes

- cereal flour and pastry -

Kind of food, dish	Raw product	Prepa-ration	Yield factor				n
			with waste ($d_{(k,p)}$) $\bar{x}$	±	edible part ($e_{(k,p)}$) $\bar{x}$	±	
Large ravioli, fried	FR m.F	d	-	-	1.22	0.02	2
Noodles, hard wheat (egg-free pasta), boiled	TR m.S	a	-	-	2.10	0.20	4
Noodles, wholemeal flour with egg, boiled	TR m.S	a	-	-	2.63	0.09	7
Noodles, wheat flour with egg, boiled	TR m.S	a	-	-	2.60	0.08	239
Semolina pudding	FR m.Z	c	-	-	0.88	0.04	5
Pancake, wholemeal flour (type 1700), pan fried	FR m.F	d	-	-	0.89	0.02	2
Pancake, wheat flour (type 405), pan fried	FR m.F	d	-	-	0.89	0.02	2
Rich pancake, wheat flour (type 405), pan fried	FR m.F	d	-	-	0.93	0.02	2
Small pasta, wholemeal flour, (1700), with egg, boiled	FR m.Z	a	-	-	1.79	0.08	2
Small pasta, wholemeal flour, (1700), with egg, boiled	TR m.S	a	-	-	2.75	0.09	2
Small pasta, wheat flour (type 405) with egg, boiled	FR m.Z	a	-	-	1.56	0.08	2
Small pasta, wheat flour (type 405) with egg, boiled	TR m.S	a	-	-	2.46	0.04	2
Small pasta wheat flour (type 405) with egg and cheese	FR* m.Z	d	-	-	0.95	0.03	2

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05);- = not available or not known;
n = number of available data; FR = fresh, raw; FR* = fresh, boiled; TR= dried product, raw;
a = boil, pressure boil; b = steam, pressure steam; c = stew, pressure stew, microwave stew; d = fry in pan with fat;
m.Z = with ingredients, common German recipe; m.S = with salt and spice;

Table 31: Weight yield factors during cooking of cereal based dishes
- bread, cake, rolls and pizza -

Kind of bread and cake	Initial ware	Prepa-ration	Yield factor		n
			edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	
Rye bread	FR *m.Z	e	0.90	0.02	2
Rye wholemeal, bread	FR** m.Z	e	0.90	0.02	2
Wheat bread (white bread)	FR* m.Z	e	0.90	0.02	2
Wheat wholemeal, bread	FR **m.Z	e	0.90	0.02	2
Wheat and rye, mixed bread	FR*** m.Z	e	0.90	0.02	5
Biscuits (short crust paste)	FR*m.Z	e	0.80	0.03	5
Biscuits (flaky paste)	FR*m.Z	e	0.72	0.03	5
Spice cake	FR*m.Z	e	0.90	0.02	2
Almond cake	FR* m.Z	e	0.92	0.02	2
Marble cake	FR* m.Z	e	0.90	0.01	2
Ring shaped cake	FR* m.Z	e	0.88	0.02	2
Ring shaped cake	FR** m.Z	e	0.93	0.02	2
Short cake	FR* m.Z	e	0.90	0.02	2
Short cake	FR** m.Z	e	0.89	0.02	2
Lemon cake	FR* m.Z	e	0.91	0.02	2
Yeast dough cake	FR* m.Z	e	0.88	0.02	2
Yeast dough cake	FR** m.Z	e	0.86	0.02	2
Yeast dough dumpling cake	FR* m.Z	e	0.96	0.02	2
Doughnut (Berlin style)	FR* m.Z	f	0.74	-	-
Waffle	FR* m.Z	h	0.79	0.02	2
Waffle	FR** m.Z	h	0.78	0.02	2
Apple tart	FR* m.Z	e	0.86	0.02	2
Apple tart	FR** m.Z	e	0.83	0.02	2
Rhubarb tart with cream	FR* m.Z	e	0.92	0.02	2
Rhubarb tart with cream	FR* m.Z	e	0.91	0.02	2
Cheese cake	FR* m.Z	e	0.87	0.02	2
Pizza Margherita	FR* m.Z	e	0.86	0.02	3
Pizza with salami	FR* m.Z	e	0.85	0.03	3

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data; FR* = wheat flour, type 405; rye flour type 815, raw;
FR** = wheat, wholemeal flour, type 1700), raw;
e = bake in oven (hot air); f = deep fry; h = contact fry; m.Z = with ingredients, common German recipe;

Table 32: Weight yield factors during preparation of beverages
- coffee and tee-

Kind of bread and cake	Initial ware	Prepa-ration	Yield factor				n
			with waste ($d_{(k,p)}$)		edible part ($e_{(k,p)}$)		
			$\bar{x}$	±	$\bar{x}$	±	
Black coffee	TP m..Z	i	0.97	0.02	0.80	0.02	5
Black coffee, instant coffee	TP m. ZP	k	1.00	-	1.00	-	-
Black tea	TP m.Z	l	0.93	0.02	0.86	0.02	5

$\bar{x}$ = mean value of available data; ± = confidence interval (p = 0,05); - = not available or not known;
n = number of available data, for food group number of food;
TP = dried product; i = infusion by using of hot water and filter; k = specification of producer;
l = infusion, ~ 4 min; m.Z = with water, common German recipe (7 g coffee/100 ml water; 1.5 g tea /100 ml water);
m.ZP = with water by specification of producer

Part 2 : Average retention factors of food constituents by cooking

I Determination

Many literature data are available on changes in the nutrient composition of food by thermal processing (cooking) in private households and large kitchens.
Retention data of food constituents (nutrients) of the present Literature and own analytical results were checked by using common statistical methods to evaluate the relations between retention and the kind of food as a function of the cooking conditions.
Retention factors of food constituents by cooking of dishes consisting of several ingredients has been found to be about the same as by cooking of the single food typical of the dish. Retention factors by cooking of individual food items were, therefore, transferred to recipes (dishes) containing several ingredients. However, the cooking method can influence nutrient retention considerably. It has to be applied ,therefore , retention factors typical for the cooking method used.
For boiling, steaming and frying, nutrient retention with or without consideration of the boiling medium and dripping juice may also be of importance.
The present data on the retention of food constituents during cooking of individual foods and dishes, are incomplete. It seemed advisable, therefore, to create average nutrient retention factors for typical food categories. This was reasonable only, however, if the nutrient retention factors by cooking of single foods or dishes belonging to a category were about the same size. Because of the standardisation of the calculation method of nutrient composition of dishes, no variation of the retention factors of food constituents were given in the enclosed tables.

Cooking of dishes, especially of breaded meat and fish , by using fat as heating medium (e.g. frying in pan, deep frying) can lead to fat uptake in food. Quantities of fat uptake are, therefore ,included in the tables. Factors for absorption of cooking salt during boiling and steaming of foodstuffs are also given.
For some food constituents, in particular niacin, biotin, folate, pantothenic acid, vitamin B_{12}, E and K, fatty acids, amino acids, cholesterol the retention data by cooking of food available are very incomplete or statistically not approved, and should be regarded as estimated retention values. They are characterised in the tables by grey shading.
For any other food components , for which at the present no retention data are available, using a retention factor of 1.0 is preliminary recommended (data presented in italics grey shaded).

The average retention factors of food constituents (nutrient) and uptakes of fat and absorption of cooking salt by cooking of foods were calculated on the basis of available data in literature [5-10] and unpublished studies [11] by using following formulae:

Retention factor of nutrient *j* in solid part *f* of dish *k*, prepared by method *p* ($a_{(j,f,k,p)}$)

$$a_{(j,f,k,p)} = \frac{Z_{(j,f,k,p)}}{X_{(j,k,p)}} \times e_{(f,k,p)} \qquad (1)$$

Retention factor of nutrient *j* in liquid part *s* of dish *k*, prepared by method *p* ($a_{(j,s,k,p)}$)

$$a_{(j,s,k,p)} = \frac{Z_{(j,s,k,p)}}{X_{(j,k,p)}} \times e_{(s,k,p)} \qquad (2)$$

Retention factor of nutrient *j* in dish *k* prepared by method *p* ($a_{(j,k,p)}$)

$$a_{(j,k,p)} = \frac{Z_{(j,k,p)}}{X_{(j,k,p)}} \times e_{(k,p)} \qquad (3a)$$

or

$$a_{(j,k,p)} = a_{(j,f,k,p)} + a_{(j,s,k,p)} \quad (3b)$$

Average retention factor of nutrient *j* in solid part *f* of dish *k* according to food category *g* prepared by method *p* ($A_{(j,f,k,g,p)}$)

$$A_{(j,f,k,g,p)} = \frac{\sum_{k=1}^{m} a_{(j,f,k,p)}}{m} \quad (4)$$

Average retention factor of nutrient *j* in total dish *k* according to food category *g* prepared by method *p* ($B_{(j,k,g,p)}$)

$$B_{(j,k,g,p)} = \frac{\sum_{k=1}^{m} a_{(j,k,p)}}{m} \quad (5)$$

Sodium chloride absorption factor *c* of dish (food) *k*, prepared by method *p* ($a_{(c,k,p)}$)

$$a_{(c,k,p)} = \frac{K_{(c,k,p)}}{L_{(c,k)}} \quad (6)$$

Sodium chloride absorption factor *c* in the solid part *f* of food (dish) *k*, prepared by method *p* ($a_{(c,f,k,p)}$)

$$a_{(c,f,k,p)} = \frac{K_{(c,f,k,p)}}{L_{(c,k)}} \quad (7)$$

The average sodium chloride absorption factor according to food category were calculated analogues to average nutrient retention factor (formulae 4, 5)

where:

m number of available retention factors for nutrient *j* in the food category concerned (k = 1...m)

$Z_{(j,f,k,p)}$ content of nutrient *j* in 100 g edible solid part *f* (e.g. meat, vegetable)of dish *k* prepared by method *p* in gram, milligram or microgram (analysed)

$Z_{(j,s,k,p)}$ content of nutrient *j* in 100 g edible liquid part *s* (e.g. gravy, soup) of dish *k* prepared by method *p* in gram, milligram or microgram (analysed)

$Z_{(j,k,p)}$ content of nutrient *j* in 100 g edible part of dish *k* prepared by method *p* in gram, milligram or microgram (analysed)

$X_{(j,k,p)}$ content of nutrient *j* in 100 g edible part of ingredients for preparation of dish *k* in gram, milligram or microgram (analysed)

$e_{(f,k,p)}$ weight yield factor of solid part *f* of dish *k*, edible part, prepared by method *p* (see formula 4 in paragraph 1)

$e_{(s,k,p)}$ weight yield factor of liquid part *s* of dish *k*, edible part, prepared by method *p* (see formula 6 in paragraph 1)

$e_{(k,p)}$ weight yield factor of dish *k*, edible part, prepared by method *p* (see formulae 2 in paragraph 1)

$K_{(c,k,p)}$ content of sodium chloride *c* in total amount of dish *k*, edible part prepared by method *p* in gram

$L_{(c,k)}$ quantity of sodium chloride *c* used for preparation of dish *k*, including waste, (weighed) in gram

$K_{(c, f, k, p)}$ content of sodium chloride *c* in solid part *f* total amount of dish *k*, edible part, prepared by method *p* in gram

Fat uptake of dish *k* prepared by method *p* related to 100 gram ingredients in ready-to-cook condition in gram ($C_{(k, p)}$.)

$$C_{(k,p)} = \left(C_{(k,p)} \times e_{(k,p)}\right) - D_{(k)} \quad (8)$$

where:

$D_{(k)}$ content of fat per 100 gram edible portion of total ingredients used for preparation of dish *k* in ready-to-cook condition (analysed) in gram.

$D_{(k, p)}$ content of fat per 100 g edible portion of dish *k* prepared by method *p* (analysed) in gram.

$e_{(k, p)}$ weight yield factor of dish *k*, edible part, prepared by method *p* (see formulae 2 in part 1)

The average fat uptake, according to food category were calculated analogues to average nutrient retention factor (formulae 4, 5)

II Tables on average nutrient retention factors by cooking of foods and dish

Table 1: Average retention factors of food constituents by cooking of **milk** and **milk product** based dishes, such as blanc mange, custard, cheese soufflé

Constituents	Retention factor		
	boil B	stew B	fry in oven B
Protein	1.00	1.00	0.95
Fat	1.00	1.00	1.00
Carbohydrate	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [1)]	1.00	1.00	1.00
Cooking salt [2)]	1.00	1.00	1.00
Sodium [1)]	1.00	1.00	1.00
Potassium	1.00	1.00	1.00
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	1.00	1.00	1.00
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	1.00	1.00	1.00
Carotenoide	1.00	1.00	1.00
Vitamin D	1.00	1.00	1.00
Vitamin E	1.00	1.00	1.00
Vitamin K	1.00	1.00	1.00
Vitamin B_1	0.90	0.80	0.75
Vitamin B_2	0.95	0.95	0.95
Niacin	0.95	0.95	0.95
Vitamin B_6	0.90	0.80	0.75
Vitamin B_{12}	0.95	0.90	0.90
Folate	0.80	0.50	0.50
Pantothenic acid	0.90	0.80	0.75
Biotin	0.95	0.90	0.90
Vitamin C	0.70	0.70	0.70
Amino acids	*1.00*	*1.00*	*0.95*
Lysine	*1.00*	*1.00*	*0.95*
Methionine	*1.00*	*1.00*	*0.95*
Cystine	*1.00*	*1.00*	*0.95*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[1)] without cooking salt; [2)] related to the quantity of cooking salt added to the food or cooking water; B = total dish (incl. cooking liquid, juice, sauce); - = not existent; grey background = estimated value;
in italics with grey background = preliminary recommended

Table 2: Average retention factors of food constituents by cooking of **egg** based dishes, such as hard cooked egg, fried egg and scrambled egg with ham, egg pan cake

constituents	retention factor		
	boil	fry in pan	
	A	B *	B **
Protein	1.00	1.00	0.95
Fat	1.00	1.00 [1)]	1.00 [1)]
Fat uptake [2)]	-	5.00	10.00
Carbohydrate	1.00	1.00	1.00
Dietary fibre	0.00	1.00	1.00
Minerals (ash) [3)]	1.00	1.00	1.00
Cooking salt [4)]	-	1.00	1.00
Sodium [3)]	1.00	1.00	1.00
Potassium	1.00	1.00	1.00
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	1.00	1.00	1.00
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	1.00	0.90	1.00
Carotenoide	1.00	0.90	1.00
Vitamin D	0.95	0.90	1.00
Vitamin E	*1.00*	*0.90*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.80	0.70	0.95
Vitamin B_2	0.80	0.70	0.95
Niacin	0.80	0.95	0.95
Vitamin B_6	0.80	0.90	0.90
Vitamin B_{12}	0.80	0.95	0.95
Folate	0.80	0.70	0.70
Pantothenic acid	0.80	0.80	0.80
Biotin	0.80	0.90	0.90
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[1)] if no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = solid part of dish; B = total dish (incl. fat);
- = not existent; [*)] = fried eggs; [**)] = scrambled eggs and pan cake;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 3: Average retention factors of food constituents by cooking of meat based dishes
- veal and beef , core temperature ~ 66 °C - 75 °C (medium),
such as beef stew, pot roast beef and roast sirloin steak -

constituents	retention factor						
	stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A
Protein	0.95	0.98	0.96	0.98	0.96	0.98	0.95
Fat	0.85	0.98	0.85[1)]	0.98[1)]	0.85[1)]	0.98[1)]	1.00
Fat uptake[2)]	-	-	1.00	-	1.00	-	1.00
Carbohydrate	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Dietary fibre	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.75	1.00	0.75	1.00	0.75	1.00	0.65
Cooking salt [4)]	0.20	1.00	0.20	1.00	0.20	1.00	0.25
Sodium [3)]	0.75	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.75	1.00	0.85	1.00	0.85	1.00	0.60
Calcium	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Magnesium	0.95	1.00	0.95	1.00	0.95	1.00	0.85
Phosphor	0.90	1.00	0.90	1.00	0.90	1.00	0.85
Iron	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*0.96*
Copper	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Zinc	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Retinol	0.85	0.90	0.85	0.90	0.85	0.90	0.90
Carotenoide	0.85	0.90	0.85	0.90	0.85	0.90	0.90
Vitamin D	0.85	0.90	0.85	0.90	0.85	0.90	0.90
Vitamin E	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Vitamin K	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Vitamin B_1	0.65	0.70	0.70	0.70	0.70	0.70	0.70
Vitamin B_2	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Niacin	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin B_6	0.65	0.70	0.70	0.70	0.70	0.70	0.70
Vitamin B_{12}	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Folate	0.90	0.95	0.90	0.95	0.90	0.95	0.90
Pantothenic acid	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Biotin	0.85	0.90	0.95	0.90	0.95	0.90	0.95
Vitamin C	-	0.85	-	0.85	-	0.85	-
Amino acids	0.95	*1.00*	0.95	*1.00*	0.95	*1.00*	0.95
Lysine	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Methionine	0.90	0.95	0.90	0.95	0.90	0.95	0.90
Cystine	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.90	1.00	0.95	1.00	0.95	1.00	0.95
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] if no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt;
[4)] related to the quantity of cooking salt added to the food or cooking water;
A = meat, edible part; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; [*)] meat with low fat (e.g. rump, top round); grey background = estimated value; in italics with grey background = preliminary recommended

Table 4: Average retention factors of food constituents by cooking of meat based dishes
- veal and beef, core temperature > 75 °C (well done), such as fricassee of veal, beef goulash, fried escallop of veal, roast beef -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.90	0.98	0.90	0.98	0.92	0.98	0.95	0.98	0.95	0.98	0.95
Fat	0.75	0.98	0.75	0.98	0.75	0.98	0.75[1)]	0.98[1)]	0.75[1)]	0.98[1)]	1.00
Fat uptake [2)]	-	-	-	-	-	-	1.00[*)]	-	1.00[*)]	-	1.00[*)]
Carbohydrate	0.90	1.00	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.40	1.00	0.40	1.00	0.60	1.00	0.65	1.00	0.65	1.00	0.65
Cooking salt [4)]	0.25	1.00	0.25	1.00	0.40	1.00	0.40	1.00	0.40	1.00	0.40
Sodium [3)]	0.45	1.00	0.45	1.00	0.45	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.50	1.00	0.50	1.00	0.50	1.00	0.60	1.00	0.60	1.00	0.60
Calcium	0.80	1.00	0.80	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Magnesium	0.60	1.00	0.60	1.00	0.65	1.00	0.85	1.00	0.85	1.00	0.85
Phosphor	0.65	1.00	0.65	1.00	0.80	1.00	0.85	1.00	0.85	1.00	0.85
Iron	1.00	1.00	1.00	1.00	1.00	1.00	0.96	1.00	0.96	1.00	0.96
Copper	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zinc	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Retinol	0.75	0.80	0.75	0.80	0.75	0.80	0.55	0.80	0.55	0.80	0.85
Carotenoide	0.75	0.80	0.75	0.80	0.75	0.80	0.55	0.80	0.55	0.80	0.85
Vitamin D	0.75	0.80	0.75	0.80	0.75	0.80	0.55	0.80	0.55	0.80	0.85
Vitamin E	0.75	1.00	0.75	1.00	0.75	1.00	0.55	1.00	0.55	1.00	0.85
Vitamin K	0.75	1.00	0.75	1.00	0.75	1.00	0.55	1.00	0.55	1.00	0.85
Vitamin B_1	0.40	0.60	0.40	0.60	0.45	0.60	0.45	0.60	0.45	0.60	0.45
Vitamin B_2	0.80	1.00	0.80	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Niacin	0.50	0.80	0.50	0.80	0.60	0.80	0.80	0.80	0.80	0.80	0.80
Vitamin B_6	0.40	0.60	0.40	0.60	0.45	0.60	0.45	0.60	0.45	0.60	0.45
Vitamin B_{12}	0.60	0.70	0.60	0.70	0.60	0.70	0.70	0.70	0.70	0.70	0.70
Folate	0.65	0.80	0.65	0.80	0.65	0.80	0.85	0.80	0.85	0.80	0.85
Pantothenic acid	0.60	0.80	0.60	0.80	0.70	0.80	0.80	0.80	0.80	0.80	0.80
Biotin	0.70	0.90	0.70	0.90	0.70	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin C	-	0.75	-	0.75	-	0.75	-	0.75	-	0.75	-
Amino acids	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90
Lysine	0.85	0.93	0.85	0.93	0.85	0.93	0.90	0.93	0.90	0.93	0.90
Methionine	0.75	0.80	0.75	0.85	0.75	0.85	0.85	0.85	0.85	0.85	0.85
Cystine	0.85	0.90	0.85	0.90	0.85	0.90	0.85	0.90	0.85	0.90	0.85
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] if no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (fat retention factor = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = solid part (meat), edible; B = total dish (incl. cooking liquid, gravy, juice, soup, edible part);
- = not existent; [*)] meat with low fat (e.g. rump, top round) = 1.00; grey background = estimated value;
in italics with grey background = preliminary recommended

Table 5: Average retention factors of food constituents by cooking of meat based dishes
- veal and beef, breaded, core temperature > 75 °C,
such as escallop of veal, breaded, fried -

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	0.98	0.98	0.98
Fat	1.00	1.00	1.00
Fat uptake [2)]	6.00	6.00	5.00
Carbohydrate	0.95	0.95	0.95
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	0.85	0.85	0.85
Sodium [3)]	1.00	1.00	1.00
Potassium	0.90	0.90	0.90
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	0.95	0.95	0.95
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.80	0.80	0.80
Carotenoide	0.80	0.80	0.80
Vitamin D	0.80	0.80	0.80
Vitamin E	1.00	1.00	1.00
Vitamin K	1.00	1.00	1.00
Vitamin B_1	0.85	0.85	0.85
Vitamin B_2	1.00	1.00	1.00
Niacin	0.90	0.90	0.90
Vitamin B_6	0.80	0.80	0.80
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.90	0.90	0.90
Pantothenic acid	0.90	0.90	0.90
Biotin	0.95	0.95	0.95
Vitamin C	0.75	0.75	0.75
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	0.90	0.90	0.90
Methionine	0.90	0.90	0.90
Cystine	0.90	0.90	0.90
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = breaded meat, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 6: Average retention factors of food constituents by cooking of meat based dishes
- pork, core temperature > 75 °C, such as pork stew, goulash, pot roast pork and pork chop, fried -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.90	0.98	0.90	0.98	0.93	0.98	0.95	0.98	0.95	0.98	0.95
Fat	0.75	0.98	0.75	0.98	0.85	0.98	0.80[1)]	0.98[1)]	0.80[1)]	0.98[1)]	1.00
Fat uptake [2)]	-	-	-	-	-	-	0.00[*)]	-	0.00[*)]	-	0.00[*)]
Carbohydrate	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.60	1.00	0.60	1.00	0.65	1.00	0.65	1.00	0.65	1.00	0.65
Cooking salt [4)]	0.25	1.00	0.20	1.00	0.40	1.00	0.25	1.00	0.25	1.00	0.25
Sodium [3)]	0.45	1.00	0.45	1.00	0.50	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.50	1.00	0.50	1.00	0.55	1.00	0.60	1.00	0.60	1.00	0.60
Calcium	0.80	1.00	0.80	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Magnesium	0.60	1.00	0.60	1.00	0.65	1.00	0.85	1.00	0.85	1.00	0.85
Phosphor	0.60	1.00	0.60	1.00	0.65	1.00	0.85	1.00	0.85	1.00	0.85
Iron	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Copper	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zinc	0.80	1.00	0.80	1.00	0.80	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Retinol	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Carotenoids	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Vitamin D	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Vitamin E	0.75	1.00	0.75	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.80
Vitamin K	0.75	1.00	0.75	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.80
Vitamin B_1	0.30	0.60	0.30	0.60	0.45	0.70	0.50	0.70	0.50	0.70	0.50
Vitamin B_2	0.70	1.00	0.70	1.00	0.75	1.00	0.85	1.00	0.85	1.00	0.85
Niacin	0.50	0.80	0.50	0.80	0.50	0.80	0.75	0.80	0.75	0.80	0.75
Vitamin B_6	0.45	0.65	0.45	0.65	0.45	0.60	0.60	0.60	0.60	0.60	0.60
Vitamin B_{12}	0.60	0.80	0.60	0.80	0.60	0.80	0.80	0.80	0.80	0.80	0.80
Folate	0.70	0.80	0.70	0.80	0.70	0.80	0.85	0.80	0.85	0.80	0.85
Pantothenic acid	0.50	0.85	0.50	0.85	0.50	0.80	0.80	0.80	0.80	0.80	0.80
Biotin	0.70	0.90	0.70	0.90	0.70	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin C	-	0.80	-	0.80	-	0.80	-	0.80	-	0.80	-
Amino acids	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Lysine	0.90	0.95	0.90	0.95	0.90	0.95	0.90	0.95	0.90	0.95	0.90
Methionine	0.80	0.85	0.80	0.85	0.80	0.85	0.85	0.85	0.85	0.85	0.85
Cystine	0.85	0.90	0.85	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] if no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [*)] meat with low fat (e.g. leg, filet) = 1.00; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = solid part (meat), edible; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;- = not existent; grey background = estimated value;
in italics with grey background = preliminary recommended

Table 7: Average retention factors of food constituents by cooking of meat based dishes
- pork, breaded, core temperature > 75 °C (well done),
such as escallop or chop of pork, breaded, fried -

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	0.98	0.98	0.98
Fat	1.00	1.00	1.00
Fat uptake [2)]	6.00	6.00	5.00
Carbohydrate	0.95	0.95	0.95
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	0.85	0.85	0.85
Sodium [3)]	1.00	1.00	1.00
Potassium	0.90	0.90	0.90
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	0.95	0.95	0.95
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.80	1.00	0.80
Carotenoid	0.80	1.00	0.80
Vitamin D	0.80	1.00	0.80
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.80	0.80	0.80
Vitamin B_2	1.00	1.00	1.00
Niacin	0.90	0.90	0.90
Vitamin B_6	0.80	0.80	0.80
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.90	0.90	0.90
Pantothenic acid	0.90	0.90	0.90
Biotin	0.95	0.95	0.95
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	0.95	0.95	0.95
Methionine	0.90	0.90	0.90
Cystine	0.95	0.95	0.95
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = breaded meat, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 8: Average retention factors of food constituents by cooking of meat based dishes
-lamb, mutton, game, core temperature > 75 °C, such as lamb stew, roast mutton, pot roast hare-

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.95	0.98	0.95	0.98	0.95	0.98	0.95	0.98	0.95	0.98	0.95
Fat	0.80	0.98	0.80	0.98	0.80	0.98	0.80 [1)]	0.98	0.80 [1)]	0.98	1.00
Fat uptake [2)]	-	-	-	-	-	-	0.00 [*)]	-	0.00 [*)]	-	0.00 [*)]
Carbohydrate	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.60	1.00	0.60	1.00	0.70	1.00	0.85	1.00	0.85	1.00	0.85
Cooking salt [4)]	0.25	1.00	0.25	1.00	0.40	1.00	0.25	1.00	0.25	1.00	0.25
Sodium [3)]	0.60	1.00	0.60	1.00	0.60	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.55	1.00	0.55	1.00	0.55	1.00	0.80	1.00	0.80	1.00	0.80
Calcium	0.80	1.00	0.80	1.00	0.80	1.00	0.90	1.00	0.90	1.00	0.90
Magnesium	0.65	1.00	0.65	1.00	0.65	1.00	0.85	1.00	0.85	1.00	0.85
Phosphor	0.80	1.00	0.80	1.00	0.80	1.00	0.85	1.00	0.85	1.00	0.85
Iron	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Copper	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Zinc	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Retinol	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Carotenoide	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Vitamin D	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Vitamin E	0.80	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.80
Vitamin K	0.80	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.80
Vitamin B_1	0.40	0.70	0.40	0.70	0.40	0.70	0.60	0.70	0.60	0.70	0.60
Vitamin B_2	0.55	1.00	0.55	1.00	0.65	1.00	0.80	1.00	0.80	1.00	0.80
Niacin	0.50	0.80	0.50	0.80	0.55	0.80	0.70	0.80	0.70	0.80	0.70
Vitamin B_6	0.40	0.80	0.40	0.80	0.45	0.75	0.60	0.75	0.60	0.75	0.60
Vitamin B_{12}	0.60	0.70	0.60	0.70	0.60	0.70	0.70	0.70	0.70	0.70	0.70
Folate	0.60	0.70	0.60	0.70	0.65	0.70	0.80	0.70	0.80	0.70	0.80
Pantothenic acid	0.40	0.75	0.40	0.75	0.50	0.75	0.80	0.75	0.80	0.75	0.80
Biotin	0.70	0.90	0.70	0.90	0.70	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin C	-	0.80	-	0.80	-	0.80	-	0.80	-	0.80	-
Amino acids	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Lysine	0.90	0.95	0.90	0.95	0.90	0.95	0.90	0.95	0.90	0.95	0.90
Methionine	0.80	0.85	0.80	0.85	0.80	0.85	0.85	0.85	0.85	0.85	0.85
Cystine	0.85	0.90	0.85	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.85	*1.00*	0.85	*1.00*	0.85	*1.00*	0.90	*1.00*	0.90	*1.00*	0.90
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] if no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [*)] = meat with low fat (e.g. leg, filet) = 1.00; [3)] without cooking salt;
[4)] related to the quantity of cooking salt added to the food or cooking water; A = meat, edible part;
B = total dish (incl. cooking liquid, gravy, juice, soup), edible part; - = not existent
grey background = estimated value; in italics with grey background = preliminary recommended

Table 9: Average retention factors of food constituents by cooking of meat based dishes
- lamb, mutton and game, breaded, core temperature > 75 °C (well done),
such as escallop of lamb, breaded, fried -

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	0.98	0.98	0.98
Fat	1.00	1.00	1.00
Fat uptake [2)]	6.00	6.00	5.00
Carbohydrate	0.95	0.95	0.95
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	0.85	0.85	0.85
Sodium [3)]	1.00	1.00	1.00
Potassium	0.90	0.90	0.90
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	0.95	0.95	0.95
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.80	0.80	0.80
Carotenoide	0.80	0.80	0.80
Vitamin D	0.82	0.80	0.80
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.85	0.85	0.85
Vitamin B_2	1.00	1.00	1.00
Niacin	0.90	0.90	0.90
Vitamin B_6	0.80	0.80	0.80
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.90	0.90	0.90
Pantothenic acid	0.90	0.90	0.90
Biotin	0.95	0.95	0.95
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	0.95	0.95	0.95
Methionine	0.90	0.90	0.90
Cystine	0.95	0.95	0.95
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = breaded meat, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 10: Average retention factors of food constituents by cooking of meat based dishes
- minced meat and meat products, core temperature > 75 °C, such as rissole, small meat ball, meat loaf, cured ham and sausage, fried -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry/roast in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.96	1.00	0.96	1.00	0.96	1.00	0.98	1.00	0.98	1.00	0.98
Fat	0.90	1.00	0.90	1.00	0.98	1.00	0.95 [1)]	1.00	0.95 [1)]	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	-	0.00	-	0.00	-	0.00
Carbohydrate	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.80	1.00	0.80	1.00	0.80	1.00	0.90	1.00	0.90	1.00	0.90
Cooking salt [4)]	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Sodium [3)]	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Potassium	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Calcium	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Phosphor	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Iron	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Copper	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zinc	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Retinol	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90
Carotenoide	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90
Vitamin D	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90
Vitamin E	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.90
Vitamin K	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin B_1	0.75	0.90	0.75	0.90	0.75	0.90	0.75	0.90	0.75	0.90	0.75
Vitamin B_2	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Niacin	0.75	0.90	0.75	0.90	0.75	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin B_6	0.75	0.90	0.75	0.90	0.75	0.90	0.75	0.90	0.75	0.90	0.75
Vitamin B_{12}	0.70	0.95	0.70	0.95	0.70	0.95	0.90	0.95	0.90	0.95	0.90
Folate	0.65	0.80	0.65	0.80	0.65	0.80	0.85	0.80	0.85	0.80	0.85
Pantothenic acid	0.75	0.90	0.75	0.90	0.75	0.90	0.85	0.90	0.85	0.90	0.85
Biotin	0.70	0.95	0.70	0.95	0.70	0.95	0.95	0.95	0.95	0.95	0.95
Vitamin C	0.70	0.80	0.70	0.80	0.70	0.80	0.80	0.80	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

1) no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat =1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = meat, edible part; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; grey background = estimated value; in italics with grey background = preliminary recommended

Table 11: Average retention factors of food constituents by cooking of meat based dishes
-minced meat and meat product, breaded , such as meat loaf and sausage, breaded, fried -

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	1.00	1.00	1.00
Fat	1.00	1.00	1.00
Fat uptake [2)]	2.00	2.00	0.50
Carbohydrate	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	0.95	0.95	0.95
Sodium [3)]	0.95	0.95	0.95
Potassium	1.00	1.00	1.00
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	1.00	1.00	1.00
Iron	*1.00*	*1.00*	*1.00*
Copper	*1.00*	*1.00*	*1.00*
Zinc	*1.00*	*1.00*	*1.00*
Other minerals	*1.00*	*1.00*	*1.00*
Retinol	*1.00*	*1.00*	*1.00*
Carotenoide	*1.00*	*1.00*	*1.00*
Vitamin D	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.90	0.90	0.90
Vitamin B_2	1.00	1.00	1.00
Niacin	0.90	0.90	0.90
Vitamin B_6	0.90	0.90	0.90
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.90	0.90	0.90
Pantothenic acid	0.90	0.90	0.90
Biotin	0.95	0.95	0.95
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystin	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = breaded meat, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 12: Average retention factors of food constituents by cooking of poultry based dishes
- chicken, core temperature > 80 °C, such as fricassee of chicken, fried chicken -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A [b]	B [b]	A [b]	B [b]	A [b]	B [b]	A [b]	B [b]	A [b]	B [b]	A [b]
Protein	0.90	1.00	0.90	1.00	0.92	1.00	0.98	1.00	1.00	1.00	0.98
Fat	0.55[*]	0.98	0.55[*]	0.98	0.60[*]	0.98	0.65[*]	0.98	0.75[*]	0.98	0.75[*]
Fat uptake [2]	-	-	-	-	-	-	0.00[c]	-	0.00[c]	-	0.00[c]
Carbohydrate	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3]	0.60	1.00	0.60	1.00	0.70	1.00	0.95	1.00	0.95	1.00	0.95
Cooking salt [4]	0.25	1.00	0.20	1.00	0.30	1.00	0.30	1.00	0.30	1.00	0.30
Sodium [3]	0.40	1.00	0.40	1.00	0.40	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.40	1.00	0.40	1.00	0.50	1.00	0.90	1.00	0.60	1.00	0.90
Calcium	0.85	1.00	0.85	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.70	1.00	0.70	1.00	0.70	1.00	0.80	1.00	0.80	1.00	0.80
Phosphor	0.70	1.00	0.70	1.00	0.70	1.00	0.85	1.00	0.80	1.00	0.85
Iron	0.80	1.00	0.80	1.00	0.80	1.00	0.95	1.00	0.95	1.00	0.95
Copper	0.50	1.00	0.50	1.00	0.50	1.00	0.85	1.00	0.60	1.00	0.85
Zinc	1.00	0.90	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Retinol	0.55	0.80	0.55	0.80	0.60	0.80	0.75	0.80	0.75	0.80	0.75
Carotenoide	0.55	0.80	0.55	0.80	0.60	0.80	0.75	0.80	0.75	0.80	0.75
Vitamin D	0.55	0.80	0.55	0.80	0.60	0.80	0.75	0.80	0.75	0.80	0.75
Vitamin E	0.55	1.00	0.55	1.00	0.60	1.00	0.75	1.00	0.80	1.00	1.00
Vitamin K	0.55	1.00	0.55	1.00	0.60	1.00	0.75	1.00	0.80	1.00	1.00
Vitamin B_1	0.55	0.70	0.55	0.70	0.55	0.70	0.70	0.70	0.60	0.70	0.55
Vitamin B_2	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.90
Niacin	0.60	0.80	0.60	0.80	0.60	0.80	0.80	0.80	0.80	0.80	0.80
Vitamin B_6	0.60	0.80	0.60	0.80	0.60	0.80	0.55	0.80	0.60	0.80	0.60
Vitamin B_{12}	0.50	0.70	0.50	0.70	0.50	0.70	0.65	0.70	0.65	0.70	0.65
Folate	0.50	0.70	0.50	0.70	0.50	0.70	0.50	0.70	0.60	0.70	0.50
Pantothenic acid	0.60	0.80	0.60	0.80	0.60	0.80	0.80	0.80	0.75	0.80	0.80
Biotin	0.70	0.90	0.70	0.90	0.70	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin C	-	0.80	-	0.80	-	0.80	-	0.80	-	0.80	-
Amino acids	0.90	*1.00*	0.90	*1.00*	0.90	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	0.85	0.93	0.85	0.93	0.85	0.93	0.95	0.93	0.85	0.93	0.85
Methionine	0.75	0.80	0.75	0.85	0.75	0.85	0.95	0.85	0.85	0.85	0.85
Cystine	0.75	0.85	0.75	0.85	0.75	0.85	0.95	0.85	0.85	0.85	0.85
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[2] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (fat retention factor = 1.00); [3] without cooking salt; [4] related to the quantity of cooking salt added to the food or cooking water;
A = solid part, edible; [b] meat with skin (whole, half, leg); [*] retention factor of fat in meat only = 1.00
[c] escallop of breast meat without skin; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; grey background = estimated value; in italics with grey background = preliminary recommended

Table 13: Average retention factors of food constituents by cooking of poultry based dishes **- chicken, breaded**, core temperature > 80 °, such as chicken leg, breaded, fried, escallop of chicken breast, breaded, fried -

constituents	retention factor		
	fry in pan A[b,c)]	fry in oven A[b,c)]	deep fry A[b,c)]
Protein	1.00	1.00	1.00
Fat	1.00	1.00	1.00
Fat uptake [2)]	5.00	5.00	4.00
Carbohydrate	0.95	0.95	0.95
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.98	0.98	0.98
Cooking salt [4)]	0.95	0.95	0.95
Sodium [3)]	1.00	1.00	1.00
Potassium	0.98	0.98	0.98
Calcium	1.00	1.00	1.00
Magnesium	0.90	0.90	0.90
Phosphor	0.90	0.90	0.90
Iron	1.00	1.00	1.00
Copper	0.90	0.90	0.90
Zinc	*1.00*	*1.00*	*1.00*
Other minerals	*1.00*	*1.00*	*1.00*
Retinol	0.80	1.00	0.80
Carotenoide	0.80	1.00	0.80
Vitamin D	0.80	1.00	0.80
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	1.00	1.00	1.00
Vitamin B_1	0.80	0.80	0.75
Vitamin B_2	1.00	1.00	1.00
Niacin	0.85	0.85	0.85
Vitamin B_6	0.60	0.80	0.60
Vitamin B_{12}	0.80	0.80	0.80
Folate	0.70	0.70	0.70
Pantothenic acid	0.90	0.90	0.90
Biotin	0.95	0.95	0.95
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; [b)] leg with skin, breaded; [c)] breast meat breaded;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 14: Average retention factors of food constituents by cooking of poultry based dishes
- duck and goose, core temperature > 80 °C, such as pot roast duck and roast goose -

constituents	retention factor										
	boil		Steam		stew, braise		frying in pan		fry in oven		deep fry
	A [b)]	B [b)]	A [b)]	B [b)]	A [b)]	B [b)]	A [b)]	B [b)]	A [b)]	B [b)]	A [b)]
Protein	0.90	1.00	0.90	1.00	0.92	1.00	0.97	1.00	0.97	1.00	0.97
Fat	0.45[*)]	0.98	0.45[*)]	0.98	0.45[*)]	0.98	0.45[*)]	0.98	0.40[*)]	0.98	0.75[*)]
Fat uptake [2)]	-	-	-	-	-	-	0.00[c)]	-	0.00[c)]	-	0.00[c)]
Carbohydrate	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.60	1.00	0.60	1.00	0.70	1.00	0.85	1.00	0.85	1.00	0.85
Cooking salt [4)]	0.25	1.00	0.20	1.00	0.30	1.00	0.30	1.00	0.30	1.00	0.30
Sodium [3)]	0.40	1.00	0.40	1.00	0.40	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.50	1.00	0.50	1.00	0.50	1.00	0.90	1.00	0.90	1.00	0.90
Calcium	0.85	1.00	0.85	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.70	1.00	0.70	1.00	0.70	1.00	0.85	1.00	0.85	1.00	0.85
Phosphor	0.70	1.00	0.70	1.00	0.70	1.00	0.85	1.00	0.85	1.00	0.85
Iron	0.80	1.00	0.80	1.00	0.80	1.00	0.95	1.00	0.95	1.00	0.95
Copper	0.50	1.00	0.50	1.00	0.50	1.00	0.85	1.00	0.85	1.00	0.85
Zinc	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Retinol	0.55	0.80	0.55	0.80	0.55	0.80	0.75	0.80	0.40	0.80	0.80
Carotenoide	0.55	0.80	0.55	0.80	0.55	0.80	0.75	0.80	0.40	0.80	0.80
Vitamin D	0.55	0.80	0.55	0.80	0.55	0.80	0.75	0.80	0.40	0.80	0.80
Vitamin E	0.55	1.00	0.55	1.00	0.55	1.00	0.75	1.00	0.40	1.00	0.80
Vitamin K	0.55	1.00	0.55	1.00	0.55	1.00	0.75	1.00	0.40	1.00	0.80
Vitamin B_1	0.40	0.60	0.40	0.60	0.40	0.70	0.70	0.70	0.65	0.70	0.60
Vitamin B_2	0.95	1.00	0.95	1.00	0.95	1.00	0.90	1.00	0.90	1.00	0.90
Niacin	0.60	0.80	0.60	0.80	0.60	0.80	0.85	0.80	0.80	0.80	0.80
Vitamin B_6	0.60	0.80	0.60	0.80	0.60	0.80	0.65	0.80	0.65	0.80	0.50
Vitamin B_{12}	0.50	0.70	0.50	0.70	0.50	0.70	0.80	0.70	0.70	0.70	0.80
Folate	0.50	0.60	0.50	0.60	0.50	0.60	0.50	0.60	0.50	0.60	0.50
Pantothenic acid	0.70	0.80	0.70	0.80	0.70	0.80	0.80	0.80	0.70	0.80	0.75
Biotin	0.70	0.90	0.70	0.90	0.70	0.90	0.70	0.90	0.70	0.90	0.70
Vitamin C	-	0.80	-	0.80	-	0.80	-	0.80	-	0.80	-
Amino acids	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Lysine	0.85	0.93	0.85	0.93	0.85	0.93	0.85	0.93	0.85	0.93	0.85
Methionine	0.75	0.80	0.75	0.85	0.75	0.85	0.85	0.85	0.85	0.85	0.85
Cystine	0.75	0.85	0.75	0.85	0.75	0.85	0.85	0.85	0.85	0.85	0.85
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (fat retention factor = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water;
A = solid part, edible; [b)] meat with skin (whole, half, breast, leg; [*)] retention factor of fat in meat only = 1.00
[c)] escallop of breast meat without skin; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; grey background = estimated value; in italics with grey background = preliminary recommended

Table 15: Average retention factors of food constituents by cooking of poultry based dishes
- duck and goose, breaded , core temperature > 80 °C,
such as escallop of duck breast, breaded, fried -

constituents	retention factor		
	fry in pan A [c)]	fry in oven A [c)]	deep fry A [c)]
Protein	0.98	0.98	0.98
Fat	1.00	1.00	1.00
Fat uptake [2)]	5.00	5.00	5.00
Carbohydrate	0.95	0.95	0.95
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	1.00	1.00	1.00
Cooking salt [4)]	0.95	0.95	0.95
Sodium [3)]	1.00	1.00	1.00
Potassium	0.98	0.98	0.98
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	0.90	0.90	0.90
Iron	1.00	1.00	1.00
Copper	0.90	0.90	0.90
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.80	0.80	0.80
Carotenoide	0.80	0.80	0.80
Vitamin D	0.80	0.80	0.80
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.80	0.80	0.70
Vitamin B_2	1.00	1.00	1.00
Niacin	0.90	0.90	0.90
Vitamin B_6	0.65	0.65	0.65
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.60	0.60	0.60
Pantothenic acid	0.80	0.80	0.80
Biotin	0.90	0.90	0.90
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; [c)] breast meat breaded;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 16: Average retention factors of food constituents by cooking of poultry based dishes
- turkey, core temperature > 80 °C, such as fricassee of turkey, fried and roast turkey -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A [b]	B [b]	A [b]	B [b]	A [b]*	B [b]	A [b]	B [b]	A [b]	B [b]	A [b]
Protein	0.90	1.00	0.90	1.00	0.92	1.00	0.98	1.00	1.10	1.00	0.98
Fat	0.55*[b]	0.98	0.55*[b]	0.98	0.60*[b]	0.98	0.75*[b]	0.98	0.75*[b]	0.98	1.00[c]
Fat uptake [2]	-	-	-	-	-	-	1.20[c]	-	1.20[c]	-	1.20[c]
Carbohydrate	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3]	0.60	1.00	0.60	1.00	0.70	1.00	0.95	1.00	0.95	1.00	0.95
Cooking salt [4]	0.25	1.00	0.20	1.00	0.30	1.00	0.30	1.00	0.30	1.00	0.30
Sodium [3]	0.40	1.00	0.40	1.00	0.40	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.40	1.00	0.40	1.00	0.50	1.00	0.90	1.00	0.60	1.00	0.90
Calcium	0.85	1.00	0.85	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.70	1.00	0.70	1.00	0.70	1.00	0.80	1.00	0.80	1.00	0.80
Phosphor	0.70	1.00	0.70	1.00	0.70	1.00	0.85	1.00	0.80	1.00	0.85
Iron	0.80	1.00	0.80	1.00	0.80	1.00	0.95	1.00	0.95	1.00	0.95
Copper	0.50	1.00	0.50	1.00	0.50	1.00	0.85	1.00	0.60	1.00	0.85
Zinc	*1.00*	*0.90*	*0.90*	*1.00*	*0.90*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Retinol	0.55	0.80	0.55	0.80	0.60	0.80	0.75	0.80	0.75	0.80	0.75
Carotenoide	0.55	0.80	0.55	0.80	0.60	0.80	0.75	0.80	0.75	0.80	0.75
Vitamin D	0.55	0.80	0.55	0.80	0.60	0.80	0.75	0.80	0.75	0.80	0.75
Vitamin E	0.55	1.00	0.55	1.00	0.60	1.00	0.75	1.00	0.80	1.00	1.00
Vitamin K	0.55	1.00	0.55	1.00	0.60	1.00	0.75	1.00	0.80	1.00	1.00
Vitamin B_1	0.55	0.70	0.55	0.70	0.55	0.70	0.70	0.70	0.60	0.70	0.55
Vitamin B_2	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.90
Niacin	0.60	0.80	0.60	0.80	0.60	0.80	0.80	0.80	0.80	0.80	0.80
Vitamin B_6	0.60	0.80	0.60	0.80	0.60	0.80	0.55	0.80	0.70	0.80	0.60
Vitamin B_{12}	0.50	0.70	0.50	0.70	0.50	0.70	0.65	0.70	0.65	0.70	0.65
Folate	0.50	0.70	0.50	0.70	0.50	0.60	0.50	0.60	0.60	0.60	0.50
Pantothenic acid	0.60	0.80	0.60	0.80	0.60	0.80	0.80	0.80	0.75	0.80	0.80
Biotin	0.70	0.90	0.70	0.90	0.70	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin C	-	0.80	-	0.80	-	0.80	-	0.80	-	0.80	-
Amino acids	0.90	*1.00*	0.90	*1.00*	0.90	*1.00*	*1.00*	1.00	*1.00*	1.00	*1.00*
Lysine	0.85	0.93	0.85	0.93	0.85	0.93	0.95	0.93	0.85	0.93	0.85
Methionine	0.75	0.80	0.75	0.85	0.75	0.85	0.95	0.85	0.85	0.85	0.85
Cystin	0.75	0.85	0.75	0.85	0.75	0.85	0.95	0.85	0.85	0.85	0.85
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.85	*1.00*	0.85	1.00	0.85	*1.00*	0.90	*1.00*	0.90	*1.00*	0.90
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[2] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (fat retention factor = 1.00); [3] without cooking salt; [4] related to the quantity of cooking salt added to the food or cooking water;
A = solid part, edible; [b] meat with skin (whole, half, breast, leg); [*] retention factor of fat in meat only ~1.00;
[c] escallop of breast meat without skin; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; grey background = estimated value; in italics with grey background = preliminary recommended

Table 17: Average retention factors of food constituents by cooking of poultry based dishes
- turkey, breaded, core temperature > 80 °C,
such as escallop of breast, breaded, fried -

constituents	retention factor		
	fry in pan A [c)]	fry in oven A [c)]	deep fry A [c)]
Protein	0.98	0.98	0.98
Fat	1.00	1.00	1.00
Fat uptake [2)]	6.00	6.00	5.00
Carbohydrate	0.95	0.95	0.95
Dietary fibre	*1.00*	*1.00*	*1.00*
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	0.95	0.95	0.95
Sodium [3)]	1.00	1.00	1.00
Potassium	0.98	0.98	0.98
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	0.90	0.90	0.90
Iron	1.00	1.00	1.00
Copper	0.90	0.90	0.90
Zinc	*1.00*	*1.00*	*1.00*
Other minerals	*1.00*	*1.00*	*1.00*
Retinol	0.80	0.80	0.80
Carotenoide	0.80	0.80	0.80
Vitamin D	0.80	0.80	0.80
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.80	0.80	0.70
Vitamin B_2	1.00	1.00	1.00
Niacin	0.90	0.90	0.90
Vitamin B_6	0.65	0.65	0.65
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.60	0.60	0.60
Pantothenic acid	0.80	0.80	0.80
Biotin	0.90	0.90	0.90
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; [c)] breast meat, breaded;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 18: Average retention factors of food constituents by cooking of offal based dishes
- liver , kidney ,lung, tongue ,blood, brain, core temperature > 80 °C, such as beef liver, pan fried -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.90	1.00	0.90	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Fat	0.80	1.00	0.80	1.00	0.80	1.00	0.95[1)]	1.00	0.95[1)]	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	-	1.00	-	1.00	-	1.00
Carbohydrate	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.60	1.00	0.60	1.00	0.70	1.00	0.75	1.00	0.75	1.00	0.75
Cooking salt [4)]	0.25	1.00	0.20	1.00	0.40	1.00	0.40	1.00	0.40	1.00	0.40
Sodium [3)]	0.60	1.00	0.60	1.00	0.70	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.60	1.00	0.60	1.00	0.70	1.00	0.75	1.00	0.75	1.00	0.75
Calcium	0.80	1.00	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.80	1.00	0.80	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Phosphor	0.70	1.00	0.70	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.80
Iron	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Copper	0.80	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.80
Zinc	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Other minerals	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Retinol	0.80	0.90	0.80	0.90	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Carotenoide	0.80	0.90	0.80	0.90	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin D	0.90	0.95	0.90	0.95	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Vitamin E	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin K	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin B_1	0.70	0.80	0.70	0.80	0.85	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin B_2	0.80	1.00	0.80	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Niacin	0.50	0.90	0.50	0.90	0.85	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin B_6	0.45	0.80	0.45	0.80	0.80	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin B_{12}	0.60	0.75	0.60	0.75	0.70	0.85	0.75	0.85	0.75	0.85	0.75
Folate	0.65	0.70	0.65	0.70	0.65	0.70	0.85	0.70	0.85	0.70	0.85
Pantothenic acid	0.60	0.80	0.60	0.80	0.85	0.90	0.85	0.90	0.85	0.90	0.85
Biotin	0.65	0.85	0.65	0.85	0.70	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin C	0.70	0.75	0.70	0.75	0.75	0.80	0.75	0.80	0.75	0.80	0.75
Amino acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00);[3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = solid part, edible; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; grey background = estimated value; in italics with grey background = preliminary recommended

Table 19: Average retention factors of food constituents by cooking of offal based dishes
-liver (beef, pork, chicken), breaded, core temperature > 80 °C , such as liver ,breaded ,pan fried

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	1.00	1.00	1.00
Fat [1)]	1.00	1.00	1.00
Fat uptake [2)]	4.00	4.00	4.00
Carbohydrate	0.95	0.95	0.95
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	1.00	1.00	1.00
Cooking salt [4)]	0.90	0.90	0.90
Sodium [3)]	1.00	1.00	1.00
Potassium	1.00	1.00	1.00
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	1.00	1.00	1.00
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.90	0.90	0.90
Carotenoide	0.90	0.90	0.90
Vitamin D	0.95	0.95	0.95
Vitamin E	1.00	1.00	1.00
Vitamin K	1.00	1.00	1.00
Vitamin B_1	0.90	0.90	0.90
Vitamin B_2	1.00	1.00	1.00
Niacin	0.90	0.90	0.90
Vitamin B_6	0.85	0.85	0.85
Vitamin B_{12}	0.85	0.85	0.85
Folate	0.85	0.85	0.85
Pantothenic acid	0.90	0.90	0.90
Biotin	0.90	0.90	0.90
Vitamin C	0.80	0.80	0.80
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = breaded offal, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 20: Average retention factors of food constituents by cooking of fish based dishes
- low fat fish (fat content < 5 %), such as cod, plaice, sole, trout, boiled, steamed, stewed or fried -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.75	1.00	0.75	1.00	0.75	1.00	0.95	1.00	0.95	1.00	0.95
Fat	0.90	1.00	0.90	1.00	0.90	1.00	0.95[1)]	1.00	0.95[1)]	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	-	1.00	-	1.00	-	1.00
Carbohydrate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Cooking salt [4)]	0.25	1.00	0.20	1.00	0.30	1.00	0.40	1.00	0.40	1.00	0.40
Sodium[3)]	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.75	1.00	0.75	1.00	0.75	1.00	0.85	1.00	0.85	1.00	0.85
Calcium	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Phosphor	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Iron	0.80	1.00	0.80	1.00	0.80	1.00	0.85	1.00	0.85	1.00	0.85
Copper	0.90	1.00	0.90	1.00	0.90	1.00	0.95	1.00	0.95	1.00	0.95
Zinc	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Retinol	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Carotenoide	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin D	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.75	0.85	0.75	0.85	0.75	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin B_2	0.70	1.00	0.70	1.00	0.70	1.00	0.90	1.00	0.90	1.00	0.90
Niacin	0.70	0.95	0.70	0.95	0.70	0.95	0.90	0.95	0.90	0.95	0.90
Vitamin B_6	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin B_{12}	0.80	0.90	0.80	0.90	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Folate	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Pantothenic acid	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Biotin	0.80	0.90	0.80	0.90	0.80	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin C	0.80	0.85	0.80	0.85	0.80	0.85	0.80	0.85	0.80	0.85	0.80
Amino acids	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Lysine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Methionine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Cystine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = fish, edible part; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; grey background = estimated value; in italics with grey background = preliminary recommended

Table 21: Average retention factors of food constituents by cooking of fish based dishes
- low fat fish (fat content < 5 %), **breaded,**
such as filet of cod, plaice, sole, trout, breaded, fried -

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	1.00	1.00	1.00
Fat	1.00	1.00	1.00
Fat uptake [2)]	6.00	6.00	6.00
Carbohydrate	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	1.00	1.00	1.00
Sodium [3)]	1.00	1.00	1.00
Potassium	1.00	1.00	1.00
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	1.00	1.00	1.00
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.90	0.90	0.90
Carotenoide	0.90	0.90	0.90
Vitamin D	0.90	0.90	0.90
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.85	0.85	0.85
Vitamin B_2	1.00	1.00	1.00
Niacin	1.00	1.00	1.00
Vitamin B_6	0.85	0.85	0.85
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.80	0.80	0.80
Pantothenic acid	0.85	0.85	0.85
Biotin	0.90	0.90	0.90
Vitamin C	0.85	0.85	0.85
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = fish, breaded, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 22: Average retention factors of food constituents by cooking of fish based dishes
- fat fish (fat content > 5 %), such as carp, herring, mackerel, sprout , boiled, steamed, stewed or fried -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.75	1.00	0.75	1.00	0.75	1.00	0.95	1.00	0.95	1.00	0.95
Fat	0.70	1.00	0.70	1.00	0.70	1.00	0.80[1)]	1.00	0.80[1)]	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	-	0.00	-	0.00	-	0.00
Carbohydrate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Cooking salt [4)]	0.25	1.00	0.20	1.00	0.30	1.00	0.40	1.00	0.40	1.00	0.40
Sodium [3)]	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.75	1.00	0.75	1.00	0.75	1.00	0.85	1.00	0.85	1.00	0.85
Calcium	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Phosphor	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Iron	0.80	1.00	0.80	1.00	0.80	1.00	0.85	1.00	0.85	1.00	0.85
Copper	0.90	1.00	0.90	1.00	0.90	1.00	0.95	1.00	0.95	1.00	0.95
Zinc	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Retinol	0.70	0.90	0.70	0.90	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Carotenoide	0.70	0.90	0.70	0.90	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin D	0.70	0.90	0.70	0.90	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin E	0.70	1.00	0.70	1.00	0.70	1.00	0.80	1.00	0.80	1.00	0.80
Vitamin K	0.70	1.00	0.70	1.00	0.70	1.00	0.80	1.00	0.80	1.00	0.80
Vitamin B_1	0.75	0.85	0.75	0.85	0.75	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin B_2	0.70	1.00	0.70	1.00	0.70	1.00	0.90	1.00	0.90	1.00	0.90
Niacin	0.70	0.95	0.70	0.95	0.70	0.95	0.90	0.95	0.90	0.95	0.90
Vitamin B_6	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin B_{12}	0.80	0.90	0.80	0.90	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Folate	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Pantothenic acid	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Biotin	0.80	0.90	0.80	0.90	0.80	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin C	0.80	0.85	0.80	0.85	0.80	0.85	0.80	0.85	0.80	0.85	0.80
Amino acids	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Lysine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Methionine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Cystine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = fish, edible part; B = total dish (incl. cooking liquid, gravy, soup), edible part; - = not existent; grey background = estimated value ; in italics with grey background = preliminary recommended

Table 23: Average retention factors of food constituents by cooking of fish based dishes
- fat fish (fat content > 5 %), **breaded-**,
such as fillet of carp, herring, mackerel, sprout, breaded, fried

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	1.00	1.00	1.00
Fat	1.00	1.00	1.00
Fat uptake [2)]	6.00	6.00	6.00
Carbohydrate	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	1.00	1.00	1.00
Sodium [3)]	1.00	1.00	1.00
Potassium	1.00	1.00	1.00
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	1.00	1.00	1.00
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.85	0.85	0.85
Carotenoide	0.85	0.85	0.85
Vitamin D	0.85	0.85	0.85
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.85	0.85	0.85
Vitamin B_2	1.00	1.00	1.00
Niacin	1.00	1.00	1.00
Vitamin B_6	0.85	0.85	0.85
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.80	0.80	0.80
Pantothenic acid	0.85	0.85	0.85
Biotin	0.90	0.90	0.90
Vitamin C	0.85	0.85	0.85
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = fish, breaded, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 24: Average retention factors of food constituents by cooking of crustaceans and molluscs based dishes -such as **crab, mussels, squid**, boiled, stewed or fried -

constituents	retention factor										
	boil		steam		stew, braise		fry in pan		fry in oven		deep fry
	A	B	A	B	A	B	A	B	A	B	A
Protein	0.75	1.00	0.75	1.00	0.75	1.00	0.95	1.00	0.95	1.00	0.95
Fat	1.00	1.00	1.00	1.00	1.00	1.00	1.00[1)]	1.00	1.00[1)]	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	-	1.00	-	1.00	-	1.00
Carbohydrate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Minerals (ash) [3)]	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Cooking salt [4)]	0.25	1.00	0.20	1.00	0.30	1.00	0.30	1.00	0.30	1.00	0.30
Sodium [3)]	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Potassium	0.75	1.00	0.75	1.00	0.75	1.00	0.85	1.00	0.85	1.00	0.85
Calcium	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Phosphor	0.85	1.00	0.85	1.00	0.85	1.00	0.90	1.00	0.90	1.00	0.90
Iron	0.80	1.00	0.80	1.00	0.80	1.00	0.85	1.00	0.85	1.00	0.85
Copper	0.90	1.00	0.90	1.00	0.90	1.00	0.95	1.00	0.95	1.00	0.95
Zinc	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	0.90	1.00	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Retinol	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Carotenoide	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin D	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin E	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin K	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin B_1	0.75	0.85	0.75	0.85	0.75	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin B_2	0.70	1.00	0.70	1.00	0.70	1.00	0.90	1.00	0.90	1.00	0.90
Niacin	0.70	0.95	0.70	0.95	0.70	0.95	0.90	0.95	0.90	0.95	0.90
Vitamin B_6	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Vitamin B_{12}	0.80	0.90	0.80	0.90	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Folate	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Pantothenic acid	0.70	0.85	0.70	0.85	0.70	0.85	0.80	0.85	0.80	0.85	0.80
Biotin	0.80	0.90	0.80	0.90	0.80	0.90	0.85	0.90	0.85	0.90	0.85
Vitamin C	0.80	0.85	0.80	0.85	0.80	0.85	0.80	0.85	0.80	0.85	0.80
Amino acids	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Lysine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Methionine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Cystine	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = fish, edible part; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part;
- = not existent; grey background = estimated value ; in italics with grey background = preliminary recommended

Table 25: Average retention factors of food constituents by cooking of crustaceans and molluscs based dishes
-such as meat of **crab, mussels, squid**, **breaded**, fried -

constituents	retention factor		
	fry in pan A	fry in oven A	deep fry A
Protein	1.00	1.00	1.00
Fat	1.00	1.00	1.00
Fat uptake [2)]	6.00	6.00	6.00
Carbohydrate	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00
Minerals (ash) [3)]	0.90	0.90	0.90
Cooking salt [4)]	1.00	1.00	1.00
Sodium [3)]	1.00	1.00	1.00
Potassium	1.00	1.00	1.00
Calcium	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00
Phosphor	1.00	1.00	1.00
Iron	1.00	1.00	1.00
Copper	1.00	1.00	1.00
Zinc	1.00	1.00	1.00
Other minerals	1.00	1.00	1.00
Retinol	0.90	0.90	0.90
Carotenoide	0.90	0.90	0.90
Vitamin D	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.85	0.85	0.85
Vitamin B_2	*1.00*	*1.00*	*1.00*
Niacin	*1.00*	*1.00*	*1.00*
Vitamin B_6	0.85	0.85	0.85
Vitamin B_{12}	0.90	0.90	0.90
Folate	0.80	0.80	0.80
Pantothenic acid	0.85	0.85	0.85
Biotin	0.90	0.90	0.90
Vitamin C	0.85	0.85	0.85
Amino acids	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = mussels, breaded, edible part;
- = not existent; grey background = estimated value;
in italics with grey background = preliminary recommended

Table 26: Average retention factors of food constituents by cooking of vegetable based dishes
- root, tuber and bulb vegetables, such as kohlrabi, carrot, parsnip, beet root, viper's grass, cleric, turnip, onions, boiled, steamed, stewed, fried -

constituents	retention factor								
	boil		steam		stew	fry in pan		bake in oven	deep fry
	A	B	A	B	B	A	B	B	A
Protein	0.90	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Fat	0.90	1.00	0.95	1.00	1.00	1.00[1)]	1.00	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	1.00	-	-	1.00
Carbohydrate	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	0.93	1.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.65	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Cooking salt [4)]	0.40	1.00	0.30	1.00	1.00	1.00	1.00	1.00	1.00
Sodium [3)]	0.55	1.00	0.80	1.00	1.00	1.00	1.00	1.00	1.00
Potassium	0.45	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Calcium	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.60	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Phosphor	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Iron	0.75	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Copper	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zinc	0.75	1.00	0.90	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Other minerals	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Carotenoide	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.70	0.90	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin B_2	0.70	0.95	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Niacin	0.70	0.95	0.80	0.95	0.95	0.95	0.95	0.95	0.95
Vitamin B_6	0.70	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin B_{12}	0.60	0.70	0.60	0.70	0.70	0.90	0.70	0.70	0.90
Folate	0.50	0.70	0.60	0.70	0.70	0.70	0.70	0.70	0.70
Pantothenic acid	0.60	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.85
Biotin	0.70	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.85
Vitamin C	0.40	0.85	0.80	0.85	0.85	0.85	0.85	0.85	0.85
Amino acids	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	0.50	1.00	0.85	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.90	1.00	0.90	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = vegetable, edible part;
B = total dish (incl. cooking liquid, gravy, juice, soup), edible part; - = not existent;
grey background = estimated value ; in italics with grey background = preliminary recommended

Table 27: Average retention factors of food constituents by cooking of vegetable based dishes
- root, tuber and bulb vegetables breaded ,
such as breaded and fried kohlrabi and onions -

Constituents	Retention factor	
	fry in pan A	deep fry A
Protein	1.00	1.00
Fat [1)]	1.00	1.00
Fat uptake [2)]	5.00	5.00
Carbohydrate	1.00	1.00
Dietary fibre	1.00	1.00
Minerals (ash) [3)]	1.00	1.00
Cooking salt [4)]	1.00	1.00
Sodium [3)]	1.00	1.00
Potassium	1.00	1.00
Calcium	1.00	1.00
Magnesium	1.00	1.00
Phosphor	1.00	1.00
Iron	1.00	1.00
Copper	1.00	1.00
Zinc	1.00	1.00
Other minerals	1.00	1.00
Carotenoide	0.90	1.00
Vitamin D	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*
Vitamin B_1	0.90	0.90
Vitamin B_2	0.95	0.95
Niacin	0.95	0.95
Vitamin B_6	0.95	0.95
Vitamin B_{12}	0.95	0.90
Folate	0.70	0.70
Pantothenic acid	0.90	0.90
Biotin	0.90	0.90
Vitamin C	0.90	0.90
Amino acids	*1.00*	*1.00*
Lysine	*1.00*	*1.00*
Methionine	*1.00*	*1.00*
Cystine	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*
Sterols	*1.00*	*1.00*
Purines	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = vegetable, breaded, edible part;
- = not existent; grey background = estimated value;
in italics with grey background = preliminary recommended

Table 28: Average retention factors of food constituents by cooking of vegetable based dishes
-stem, flower, fruit, corn and seed vegetables, such as asparagus, broccoli, Brussels sprouts, chicory, green beans, cauliflower, egg plants, green peas, paprika, squash, zucchini, sweet corn -

Constituents	Retention factor								
	boil		steam		stew	fry in pan		bake in oven	deep fry
	A	B	A	B	B	A	B	B	A
Protein	0.90	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Fat [1)]	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	1.00	-	-	1.00
Carbohydrate	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	0.93	1.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.65	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Cooking salt [4)]	0.40	1.00	0.35	1.00	1.00	0.80	1.00	1.00	1.00
Sodium [3)]	0.75	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Potassium	0.50	1.00	0.85	1.00	1.00	0.90	1.00	1.00	1.00
Calcium	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.60	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Phosphor	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Iron	0.75	1.00	0.80	1.00	1.00	1.00	1.00	1.00	1.00
Copper	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zinc	0.75	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Carotenoide	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin B_1	0.65	0.80	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin B_2	0.65	0.95	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Niacin	0.65	0.95	0.80	0.95	0.95	0.95	0.95	0.95	0.95
Vitamin B_6	0.65	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin B_{12}	0,70	0.80	0.70	0.80	0.70	0.80	0.70	0.70	0.80
Folate	0.50	0.70	0.60	0.70	0.70	0.70	0.70	0.70	0.70
Pantothenic acid	0.70	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.85
Biotin	0.70	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.85
Vitamin C	0.65	0.85	0.75	0.85	0.80	0.80	0.80	0.80	0.80
Amino acids	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	0.50	1.00	0.85	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.90	1.00	0.90	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = fish, edible part; B = total dish (incl. cooking liquid, gravy, juice, soup), edible part; - = not existent; grey background = estimated value;
in italics with grey background = preliminary recommended

Table 29: Average retention factors of food constituents by cooking of vegetable based dishes
- stem, flower and fruit vegetables, breaded, such as broccoli, cauliflower, egg plants, zucchini, breaded, fried -

Constituents	retention factor	
	fry in pan	deep fry
Protein	1.00	1.00
Fat	1.00	1.00
Fat uptake [2)]	5.00	5.00
Carbohydrate	1.00	1.00
Dietary fibre	1.00	1.00
Minerals (ash) [3)]	1.00	1.00
Cooking salt [4)]	1.00	1.00
Sodium [3)]	1.00	1.00
Potassium	1.00	1.00
Calcium	1.00	1.00
Magnesium	1.00	1.00
Phosphor	1.00	1.00
Iron	1.00	1.00
Copper	1.00	1.00
Zinc	1.00	1.00
Other minerals	1.00	1.00
Carotenoide	0.90	0.90
Vitamin D	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*
Vitamin B_1	0.90	0.90
Vitamin B_2	0.95	0.95
Niacin	0.95	0.95
Vitamin B_6	0.95	0.95
Vitamin B_{12}	0.70	0.80
Folate	0.70	0.70
Pantothenic acid	0.90	0.90
Biotin	0.90	0.90
Vitamin C	0.90	0.90
Amino acids	*1.00*	*1.00*
Lysine	*1.00*	*1.00*
Methionine	*1.00*	*1.00*
Cystine	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*
Sterols	*1.00*	*1.00*
Purines	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food;
A = vegetable, breaded, edible part; - = not existent;
grey background = estimated value;
in italics with grey background = preliminary recommended

Table 30: Average retention factors of food constituents by cooking of vegetable based dishes
- leafy vegetables -, such as boiled, stewed red cabbage, white cabbage, Savoy cabbage, spinach -

Constituents	Retention factor					
	boil		steam		stew	bake in oven
	A	B	A	B	B	B
Protein	0.90	1.00	0.95	1.00	1.00	1.00
Fat	0.90	1.00	0.95	1.00	1.00	1.00
Fat uptake	-	-	-	-	-	-
Carbohydrate	0.90	1.00	0.95	1.00	1.00	1.00
Dietary fibre	0.93	1.00	0.94	1.00	1.00	1.00
Minerals (ash) [3)]	0.65	1.00	0.90	1.00	1.00	1.00
Cooking salt [4)]	0.40	1.00	0.35	1.00	1.00	1.00
Sodium [3)]	0.75	1.00	0.85	1.00	1.00	1.00
Potassium	0.50	1.00	0.85	1.00	1.00	1.00
Calcium	0.95	1.00	0.95	1.00	1.00	1.00
Magnesium	0.60	1.00	0.90	1.00	1.00	1.00
Phosphor	0.90	1.00	0.95	1.00	1.00	1.00
Iron	0.75	1.00	0.80	1.00	1.00	1.00
Copper	0.95	1.00	1.00	1.00	1.00	1.00
Zinc	0.75	1.00	0.90	1.00	1.00	1.00
Other minerals	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*
Carotenoide	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.65	0.80	0.80	0.90	0.90	0.90
Vitamin B_2	0.65	0.95	0.90	0.95	0.95	0.95
Niacin	0.65	0.95	0.80	0.95	0.95	0.95
Vitamin B_6	0.65	0.90	0.85	0.90	0.90	0.90
Vitamin B_{12}	0.60	0.70	0.60	0.70	0.70	0.70
Folate	0.50	0.70	0.60	0.70	0.70	0.70
Pantothenic acid	0.70	0.90	0.85	0.90	0.90	0.90
Biotin	0.70	0.90	0.85	0.90	0.90	0.90
Vitamin C	0.40	0.55	0.55	0.60	0.60	0.60
Amino acids	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*
Lysine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*
Methionine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*
Cystine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*
Organic acids	0.50	1.00	0.85	*1.00*	*1.00*	*1.00*
Sterols	1.00	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	0.90	*1.00*	*0.90*	*1.00*	*1.00*	*1.00*
other food constituents	1.00	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = vegetable, edible part;
B = total dish (incl. cooking liquid, gravy, soup), edible part; - = not existent;
grey background = estimated value ; in italics with grey background = preliminary recommended

Table 31: Average retention factors of food constituents by cooking of **raw potato** based dishes
- such as boiled potato, potato puree, fried potato, potato cake, French fries -

Constituents	Retention factor								
	boil			steam		stew	fry in pan	bake in oven	deep fry
	A[b)]	A[c)]	B	A[b)]	A[c)]	B	B	B	B
Protein	1.00	0.95	1.00	1.0	0.95	1.00	1.00	1.00	1.00
Fat	1.00	0.90	1.00	1.00	0.95	1.00	1.00[1)]	1.00[1)]	1.00
Fat uptake [2)]	-	-	-	-	-	-	4.00[*]	-	5.00[**]
Carbohydrate	1.00	0.90	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Dietary fibre	1.00	0.93	1.00	1.00	0.94	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.85	0.70	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Cooking salt [4)]	0.20	0.30	1.00	0.10	0.20	1.00	1.00	1.00	1.00
Sodium [3)]	0.60	0.80	1.00	0.65	0.90	1.00	1.00	1.00	1.00
Potassium	0.90	0.80	1.00	0.95	0.85	1.00	1.00	1.00	1.00
Calcium	0.95	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Magnesium	0.95	0.90	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Phosphor	0.95	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Iron	0.95	0.90	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Copper	0.95	0.90	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Zinc	0.95	0.90	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Other minerals	0.95	0.90	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Carotenoide	1.00	0.90	1.00	1.00	0.90	0.90	0.90	0.90	0.90
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.80	0.75	0.90	0.85	0.85	0.90	0.90	0.80	0.80
Vitamin B_2	0.80	0.85	0.95	0.90	0.95	0.95	0.95	1.00	1.00
Niacin	0.95	0.70	0.90	0.95	0.90	0.95	0.95	0.90	0.95
Vitamin B_6	0.85	0.70	0.95	0.90	0.85	0.90	0.90	0.90	0.90
Vitamin B_{12}	1.00	0.70	0.90	1.00	0.80	0.80	0.80	0.80	0.80
Folate	0.90	0.50	0.75	0.90	0.60	0.75	0.75	0.75	0.75
Pantothenic acid	0.90	0.70	0.90	0.90	0.85	0.90	0.90	0.90	0.90
Biotin	0.90	0.70	0.90	0.90	0.85	0.90	0.90	0.90	0.90
Vitamin C	0.80	0.70	0.85	0.80	0.80	0.85	0.80[*]	0.80	0.90
Amino acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*0.70*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*0.90*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = potato, edible part; [*)] German potato cake ; [**)] French fries
B = total dish (incl. cooking liquid, gravy, soup), edible part; [b)] potatoes with peel; [c)] potatoes peeled;
- = not existent; grey background = estimated value; in italics with grey background = preliminary recommended

Table 32: Average retention factors of food constituents by cooking of **potato products** based dishes -such as mashed potato, potato dumplings and French fries -

Constituents	Retention factor					
	boil		stew	fry in pan	fry in oven	deep fry
	A	B	B	A*	A**	A**
Protein	0.95	1.00	1.00	1.00	1.00	1.00
Fat [1)]	0.95	1.00	1.00	1.00	1.00	1.00
Fat uptake [2)]	-	-	-	10.00	-	6.00
Carbohydrate	0.90	1.00	1.00	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.70	1.00	1.00	1.00	1.00	1.00
Cooking salt [4)]	0.30	1.00	1.00	1.00	1.00	1.00
Sodium [3)]	0.80	1.00	1.00	1.00	1.00	1.00
Potassium	0.80	1.00	1.00	1.00	1.00	1.00
Calcium	0.95	1.00	1.00	1.00	1.00	1.00
Magnesium	0.90	1.00	1.00	1.00	1.00	1.00
Phosphor	0.90	1.00	1.00	1.00	1.00	1.00
Iron	0.95	1.00	1.00	1.00	1.00	1.00
Copper	0.90	1.00	1.00	1.00	1.00	1.00
Zinc	0.90	1.00	1.00	1.00	1.00	1.00
Other minerals	0.90	1.00	1.00	1.00	1.00	1.00
Carotenoide	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin D	1.00	1.00	1.00	1.00	1.00	0.90
Vitamin E	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin K	1.00	1.00	1.00	1.00	1.00	1.00
Vitamin B_1	0.80	0.90	0.90	0.90	0.90	0.85
Vitamin B_2	0.90	0.95	0.95	0.95	0.95	0.95
Niacin	0.80	0.90	0.95	0.95	0.95	0.95
Vitamin B_6	0.80	0.90	0.90	0.95	0.90	0.95
Vitamin B_{12}	0.80	0.90	0.70	0.80	0.90	0.90
Folate	0.75	0.80	0.70	0.80	0.80	0.80
Pantothenic acid	0.80	0.90	0.90	0.90	0.90	0.90
Biotin	0.80	0.90	0.90	0.90	0.90	0.90
Vitamin C	0.70	0.95	0.90	0.95	0.95	0.95
Amino acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] no fat used for frying; [2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; (retention factor of fat = 1.00); [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water; A = potato, edible part; [*)] German potato cake ; [**)] French fries, potato croquettes; B = total dish (incl. cooking liquid, gravy, soup), edible part; - = not existent;
grey background = estimated value; in italics with grey background = preliminary recommended

Table 33: Average retention factors of food constituents by cooking of **mushrooms** based dishes
- such as **chanterelle, flat, oyster, mushroom** ,stewed , fried-

Constituents	Retention factor								
	boil		steam		stew	fry in pan		bake in oven	deep fry
	A	B	A	B	B	A	B	B	A
Protein	0.90	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Fat [1)]	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fat uptake [2)]	-	-	-	-	-	1.00	-	-	1.00
Carbohydrate	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.65	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Cooking salt [4)]	0.40	1.00	0.35	1.00	1.00	1.00	1.00	1.00	1.00
Sodium [3)]	0.75	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Potassium	0.50	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Calcium	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	0.60	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Phosphor	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Iron	0.75	1.00	0.80	1.00	1.00	1.00	1.00	1.00	1.00
Copper	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zinc	0.75	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Other minerals	0.90	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Carotenoide	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	0.90	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*0.90*
Vitamin K	*1.00*	*1.00*	0.90	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.65	0.80	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin B_2	0.65	0.95	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Niacin	0.65	0.95	0.80	0.95	0.95	0.95	0.95	0.95	0.95
Vitamin B_6	0.65	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Vitamin B_{12}	0.70	0.80	0.70	0.80	0.70	0.80	0.70	0.70	0.80
Folate	0.50	0.70	0.60	0.70	0.70	0.70	0.70	0.70	0.70
Pantothenic acid	0.70	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.85
Biotin	0.70	0.90	0.85	0.90	0.90	0.90	0.90	0.90	0.85
Vitamin C	0.65	0.85	0.75	0.85	0.80	0.80	0.80	0.80	0.80
Amino acids	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	0.90	1.00	0.95	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	0.50	1.00	0.85	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*0.90*	*1.00*	*0.90*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] using fat for frying(German recipes); [2)] fat uptake in gram related to 100 g food (ingredients);
[3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water;
A = solid part (vegetable), edible; B = total dish (incl. cooking liquid, sauce, soup), edible part; - = not existent;
grey background = estimated value ; in italics with grey background = preliminary recommended

Table 34: Average retention factors of food constituents by cooking of mushrooms based dishes
- such as **mushroom, breaded,** fried -

Constituents	Retention factor	
	fry in pan A	deep fry A
Protein	1.00	1.00
Fat	1.00	1.00
Fat uptake [2)]	5.00	5.00
Carbohydrate	1.00	1.00
Dietary fibre	1.00	1.00
Minerals (ash) [3)]	1.00	1.00
Cooking salt [4)]	1.00	1.00
Sodium [3)]	1.00	1.00
Potassium	1.00	1.00
Calcium	1.00	1.00
Magnesium	1.00	1.00
Phosphor	1.00	1.00
Iron	1.00	1.00
Copper	1.00	1.00
Zinc	1.00	1.00
Other minerals	1.00	1.00
Carotenoide	*1.00*	*1.00*
Vitamin D	*1.00*	*1.00*
Vitamin E	*1.00*	*0.90*
Vitamin K	*1.00*	*1.00*
Vitamin B_1	0.90	0.90
Vitamin B_2	0.95	0.95
Niacin	0.95	0.95
Vitamin B_6	0.95	0.95
Vitamin B_{12}	0.70	0.80
Folate	0.70	0.70
Pantothenic acid	0.90	0.90
Biotin	0.90	0.90
Vitamin C	0.90	0.90
Amino acids	*1.00*	*1.00*
Lysine	*1.00*	*1.00*
Methionine	*1.00*	*1.00*
Cystine	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*
Sterols	*1.00*	*1.00*
Purines	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*

[2)] using fat for frying (German recipes); fat uptake in gram related to 100 g food ingredients; [3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food; A = mushroom, breaded, edible part;
- = not existent; grey background = estimated value;
in italics with grey background = preliminary recommended

Table 35: Average retention factors of food constituents by cooking of legume based dishes
- such as **beans, lentils, peas** ,stewed -

Constituentss	Retention factor				
	boil [a)]		boil [b)]		stew, braise [a)]
	A	B	A	B	B
Protein	0.98	1.00	0.98	1.00	1.00
Fat	1.00	1.00	1.00	1.00	1.00
Carbohydrate	0.95	1.00	0.95	1.00	1.00
Dietary fibre	1.00	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.75	1.00	0.65	0.90	1.00
Cooking salt [4)]	0.35	1.00	0.35	1.00	1.00
Sodium [3)]	0.75	1.00	0.75	0.90	1.00
Potassium	0.75	1.00	0.75	0.90	1.00
Calcium	0.85	1.00	0.85	1.00	1.00
Magnesium	0.85	1.00	0.85	1.00	1.00
Phosphor	0.90	1.00	0.90	1.00	1.00
Iron	0.85	1.00	0.85	1.00	1.00
Copper	0.70	1.00	0.70	1.00	1.00
Zinc	0.90	1.00	0.90	1.00	1.00
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Carotenoide	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	0.90	1.00	0.90	1.00	1.00
Vitamin K	0.90	1.00	0.90	1.00	1.00
Vitamin B_1	0.65	0.80	0.65	0.75	0.80
Vitamin B_2	0.75	1.00	0.75	1.00	1.00
Niacin	0.65	0.80	0.65	0.75	0.80
Vitamin B_6	0.70	0.80	0.70	0.70	0.80
Vitamin B_{12}	1.00	1.00	1.00	1.00	1.00
Folate	0.50	0.60	0.50	0.55	0.60
Pantothenic acid	0.55	0.75	0.55	0.70	0.75
Biotin	0.85	0.95	0.85	0.90	0.95
Vitamin C	0.60	0.60	0.60	0.60	0.60
Amino acids	1.00	1.00	1.00	1.00	1.00
Lysine	1.00	1.00	1.00	1.00	1.00
Methionine	1.00	1.00	1.00	1.00	1.00
Cystine	1.00	1.00	1.00	1.00	1.00
Organic acids	0.80	1.00	0.80	0.80	1.00
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[3)] = without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water;
A = solid part (vegetable), edible; B = total dish (incl. cooking liquid, sauce, soup), edible part;
- = not existent; [a)] cooked in soaking water; [b)] without soaking water;
grey background = estimated value; in italics with grey background = preliminary recommended

Table 36: Average retention factors of food constituents by cooking of fruit based dishes - such as **apple, apricot, cherry and strawberry**, stewed, jelly and jam -

Constituents	Retention factor				
	boil [a)]		stew	jelly, jam *	bake
	A	B	B	B	B
Protein	0.95	1.00	1.00	1.00	1.00
Fat	1.00	1.00	1.00	1.00	1.00
Carbohydrate	0.80	1.00	1.00	1.00	1.00
Dietary fibre	0.80	1.00	1.00	1.00	1.00
Minerals (ash)	0.60	1.00	1.00	1.00	1.00
Sodium	0.60	1.00	1.00	1.00	1.00
Potassium	0.60	1.00	1.00	1.00	1.00
Calcium	0.95	1.00	1.00	1.00	1.00
Magnesium	0.80	1.00	1.00	1.00	1.00
Phosphor	0.80	1.00	1.00	1.00	1.00
Iron	0.90	1.00	1.00	1.00	1.00
Copper	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Zinc	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Retinol	0.75	0.75	0.75	0.90	0.90
Carotenoide	0.75	0.75	0.75	0.90	0.90
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.65	0.80	0.80	0.90	1.00
Vitamin B_2	0.80	1.00	1.00	1.00	1.00
Niacin	0.80	0.90	0.90	1.00	1.00
Vitamin B_6	0.70	0.90	0.90	1.00	1.00
Vitamin B_{12}	0.90	1.00	1.00	1.00	1.00
Folate	0.50	0.70	0.70	0.80	1.00
Pantothenic acid	0.80	0.90	0.90	1.00	1.00
Biotin	1.00	1.00	1.00	1.00	1.00
Vitamin C	0.40	0.70	0.70	0.80	1.00
Amino acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	0.50	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	0.90	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

* = fruit : sugar ~1:1; cooking time ~ 15 min at 100 °C; A = fruit, edible part;
B = total dish (incl. cooking liquid); grey background = estimated value;
in italics with grey background = preliminary recommended

Table 37: Average retention factors of food constituents by cooking of **cereal grains and seeds** based dishes
- such as wheat, barley ,rice, millet boiled , stewed -

Constituents	retention factor					
	whole			polished		
	boil		stew	boil		stew
	A	B	B	A	B	B
Protein	0.95	1.00	1.00	0.95	1.00	1.00
Fat	0.90	1.00	1.00	0.90	1.00	1.00
Carbohydrate	0.95	1.00	1.00	0.95	1.00	1.00
Dietary fibre	0.95	1.00	1.00	0.95	1.00	1.00
Minerals (ash) [3)]	0.70	1.00	1.00	0.70	1.00	1.00
Cooking salt [4)]	0.20	1.00	1.00	0.25	1.00	1.00
Sodium [3)]	0.80	1.00	1.00	0.60	1.00	1.00
Potassium	0.80	1.00	1.00	0.55	1.00	1.00
Calcium	1.00	1.00	1.00	1.00	1.00	1.00
Magnesium	1.00	1.00	1.00	1.00	1.00	1.00
Phosphor	0.95	1.00	1.00	0.95	1.00	1.00
Iron	1.00	1.00	1.00	0.95	1.00	1.00
Copper	1.00	1.00	1.00	0.95	1.00	1.00
Zinc	0.95	1.00	1.00	0.95	1.00	1.00
Other minerals	1.00	1.00	1.00	1.00	1.00	1.00
Retinol	0.90	0.95	0.95	0.90	0.95	0.95
Carotenoide	0.90	0.95	0.95	0.90	0.95	0.95
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.50	0.75	0.75	0.50	0.75	0.75
Vitamin B_2	0.75	1.00	1.00	0.50	1.00	1.00
Niacin	0.75	0.95	0.95	0.75	0.95	0.95
Vitamin B_6	0.50	0.80	0.80	0.50	0.80	0.80
Vitamin B_{12}	0.75	0.95	0.95	0.75	0.95	0.95
Folate	0.70	0.80	0.80	0.70	0.80	0.80
Pantothenic acid	0.75	0.95	0.95	0.75	0.95	0.95
Biotin	0.75	0.95	0.95	0.75	0.95	0.95
Vitamin C	0.70	0.70	0.70	0.70	0.70	0.70
Amino acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water;
A = grain, edible part; B = total dish (incl. cooking liquid, sauce, soup), edible part;
grey background = estimated value; in italics with grey background = preliminary recommended

Table 38: Average retention factors of food constituents by cooking of **cereal flour** based dishes
- such as pasta (noodles), pan cake, bread, pizza, cake -

Constituents	retention factor						
	pasta (noodles)				pan cake		bread, pizza, cake
	whole grain flour		white flour				
	boil		boil		fry	deep fry	bake
	A	B	A	B	A	A	A
Protein	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fat	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fat uptake [2)]	-	-	-	-	7.00	7.00	-
Carbohydrate	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Dietary fibre	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Minerals (ash) [3)]	0.50	0.50	1.00	1.00	1.00	1.00	1.00
Cooking salt [4)]	0.15	0.15	0.15	0.15	1.00	1.00	1.00
Sodium [3)]	0.50	0.50	0.50	0.50	1.00	1.00	1.00
Potassium	0.60	0.65	0.60	0.65	1.00	1.00	1.00
Calcium	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Magnesium	0.85	0.85	0.85	0.85	1.00	1.00	1.00
Phosphor	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Iron	0.75	0.75	0.75	0.75	1.00	1.00	1.00
Copper	0.90	0.90	0.90	0.90	1.00	1.00	1.00
Zinc	*1.00*	*1.00*	*1.00*	1.00	1.00	1.00	1.00
Other minerals	*1.00*	*1.00*	*1.00*	*1.00*	1.00	1.00	1.00
Retinol	0.90	0.95	0.90	0.95	0.90	0.90	0.90
Carotenoide	0.90	0.95	0.90	0.95	0.90	0.90	0.90
Vitamin D	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin E	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin K	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Vitamin B_1	0.65	0.50	0.85	0.80	0.90	0.90	0.75
Vitamin B_2	0.70	0.70	1.00	1.00	1.00	1.00	1.00
Niacin	0.65	0.65	0.90	0.90	1.00	1.00	0.95
Vitamin B_6	0.80	0.75	0.90	0.85	0.90	0.90	0.90
Vitamin B_{12}	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Folate	0.70	0.70	0.70	0.70	0.70	0.70	0.50
Pantothenic acid	0.80	0.80	0.90	0.90	0.80	0.80	0.75
Biotin	0.80	0.80	1.00	1.00	1.00	1.00	1.00
Vitamin C	0.70	0.70	0.70	0.70	0.85	0.85	0.70
Amino acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Lysine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Methionine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Cystine	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Organic acids	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Sterols	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Purines	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
other food constituents	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

[1)] using fat for frying (German recipes); [2)] fat uptake in gram related to 100 g food (ingredients);
[3)] without cooking salt; [4)] related to the quantity of cooking salt added to the food or cooking water;
A = solid part (e.g. pasta), edible; B = total dish (incl. cooking liquid, sauce, soup), edible part;
grey background = estimated value ; in italics with grey background = preliminary recommended

Table 39: Average retention factors of food constituents by infusion of **coffee and tea**

Constituents	Retention factor	
	coffee infusion with boiling water [a)] B	**tea** infusion with boiling water [b)] B
Protein	0.50	0.35
Fat	0.30	0.30
Carbohydrate	0.90	0.90
Dietary fibre	0.00	0.00
Minerals (ash)	0.80	0.80
Sodium	0.90	1.00
Potassium	0.95	0.70
Calcium	0.20	0.40
Magnesium	0.50	0.50
Phosphor	0.20	0.20
Iron	0.05	0.05
Copper	0.05	0.05
Zinc	0.05	0.05
Other minerals	0.05	0.05
Retinol	0.00	0.00
Carotenoide	0.00	0.00
Vitamin D	0.00	0.00
Vitamin E	0.00	0.00
Vitamin K	0.00	0.00
Vitamin B_1	1.00	1.00
Vitamin B_2	0.20	0.15
Niacin	0.90	0.90
Vitamin B_6	0.90	0.75
Vitamin B_{12}	0.90	0.90
Folate	0.80	0.80
Pantothenic acid	0.90	0.90
Biotin	0.90	0.90
Vitamin C	0.90	0.90
Amino acids	0.50	0.35
Lysine	0.50	0.35
Methionine	0.50	0.35
Cystine	0.50	0.35
Organic acids	0.90	0.50
Sterols	0.00	0.00
Coffein	0.90	0.40
other food constituents	0.50	0.50

[a)] infusion time ca. 4 min, filtered;
[b)] infusion time 3 to 5 min;
* = retention factor of fluoride = ca. 0.80

Appendix A

Examples for recipe information and conversion of base recipe to a recipe for 100 g edible portion ready-to-eat dish

A recipe can be defined as a list of ingredients and directions for preparing a dish.
The base recipe should contain the following information's: name of dish, initial product, cooking method, temperature, time, number of portions, required portion size, amount of ingredients (ready-to-cook) incl. absorbed fat and weight yield by preparation.
Base recipe information's:

Dish name	**Rice, polished boiled (code)**
Raw product	dried, raw
Cooking method	boil
Cooking temperature °C	100
Cooking time (min)	16
Number of portions	4.0

Ingredients (foods)	
Amount in gram	**Name (code)**
260	rice, long grain, polished
9.0	sodium chloride (salt)
Weight yield factor for rice, long grain, polished, boiled ($e_{(k, p)}$): 3.00 (borrowed from encl. weight yield table)	

Dish name	**Chicken, fried, with skin (code)**
Raw product	raw, fresh or deep frozen
Cooking method	fry in oven
Cooking temperature °C	200
Cooking time (min)	50
Number of portions	2.0

Ingredients (foods)	
Amount in gram	**Name (code)**
1000	chicken, whole, fresh
4.5	sodium chloride (salt)
0.4	pepper, white, powder
1.3	paprika, powder
Weight yield amount, with waste ($V_{(k, p)}$): 750 g (weighed) Weight yield amount, meat with skin, edible part ($Z_{(k, p)}$): 580 g (weighed) [3] weight yield factor, with bones ($d_{(f, k, p)}$) = 0.75; [4]weight yield factor, meat with skin ($e_{(f,k,p)}$) = 0.58	

Dish name	**Pot roast pork with juice (code)**
Raw product	raw, fresh
Cooking method	braise in pot
Cooking temperature °C	180/100
Cooking time (min)	13/75
Number of portions	4

Ingredients (foods)	
Amount in gram	**Name (code)**
800	pork chuck
3.4	sodium salt
0.6	pepper black, powder
24	fat
Weight yield factor ($e_{(k, p)}$) = 1.08 (borrowed from encl. Weight yield table) Weight yield factor for solid part, meat ($e_{(f, k, p)}$) =0.68 Weight yield factor for liquid part, juice ($e_{(s, k, p)}$) =0.40	

Dish name	**Pork escallop, breaded (code)**
Raw product	raw, fresh
Cooking method	fry in pan
Cooking temperature °C	180
Cooking time (min)	13
Number of portions	4

Ingredients (foods)	
Amount in gram	**Name (code)**
680 (4*á 170 g)	pork ,shoulder, leg or neck
30	water
80	breading (convenience product)
47	fat uptake*
*analysed ;Weight yield factor ($e_{(k, p)}$) = 0.68 (borrowed from encl. Weight yield table)	

For conversion of base recipe to a recipe for preparation of 100 g edible portion of dish the following algorithms have been proved:

Amount of ingredient *i* including waste for 100 g edible portion of dish *k* prepared by method *p* in gram *($x_{(i, k, p)}$)*

$$x_{(i,k,p)} = \frac{u_{(i,k)}}{F_{(k,p)}} \tag{1}$$

Total amount of ingredient including waste for 100 g edible portion of dish *k* prepared by method *p* in gram ($X_{(k, p)}$)

$$X_{(k,p)} = \sum_{i=1}^{n} x_{(i,k,p)} \tag{2}$$

Amount of ingredient *i,* edible part, for 100 g edible portion of dish *k* prepared by method *p* in gram *($y_{(i, k, p)}$)*

$$y_{(i,k,p)} = x_{(i,k,p)} \times \frac{e_{(k,p)}}{d_{(k,p)}} \tag{3}$$

Total amount of ingredients, edible part, for 100 g edible portion of dish *k* prepared by method *p* in gram *($Y_{(k, p)}$)*

$$Y_{(k,p)} = \sum_{i=1}^{n} x_{(i,k,p)} \tag{4}$$

Factor for conversion of ground recipe to recipe for 100 g edible portion of dish *k* prepared by method *p* ($F_{(k, p)}$)

$$F_{(k,p)} = \frac{U_{(k)}}{R_{(k,p)}} \times e_{(k,p)} \tag{5}$$

Amount of dish including waste per 100g edible portion of dish *k* prepared by method *p* in gram ($P_{(k, p)}$)

$$P_{(k,p)} = \frac{V_{(k,p)}}{F_{(k,p)}} \tag{6}$$

Amount of solid part *f* per 100 g edible portion of dish *k* prepared by method *p* in gram ($P_{(f, k, p)}$)

$$P_{(f,k,p)} = X_{(k,p)} \times e_{(f,k,p)} = \frac{Z_{(f,k,p)}}{F_{(k,p)}} \tag{7}$$

Amount of liquid part *s* per 100 g edible portion of dish *k* prepared by method *p* in gram ($P_{(s, k, p)}$)

$$P_{(s,k,p)} = X_{(k,p)} \times e_{(s,k,p)} \frac{Z_{(s,k,p)}}{F_{(k,p)}} \tag{8}$$

where:

$u_{(i, k)}$ amount of ingredient *i* according to the base recipe of dish *k* in gram
$R_{(k, p)}$ edible portion size of dish *k*, prepared by method *p* in gram; in this case = 100 (see note)
$U_{(k)}$ total amount of ingredients according to ground recipe dish *k* in gram
$V_{(k, p)}$ quantity of dish *k* including waste prepared by method *p* in gram
$Z_{(f, k, p)}$ quantity of solid part *f* of dish *k*, edible part, prepared by method *p* in gram
$Z_{(s, k, p)}$ quantity of liquid part *s* of dish *k*, edible part, after preparation by method *p* in gram
$d_{k, p)}$ weight yield factor of dish *k* including waste prepared by method *p*
$e_{(k, p)}$ weight yield factor of dish *k*, edible part, prepared by method *p*
$e_{(f, k, p)}$ weight yield factor of solid part *f* of dish *k*, edible part, prepared by method *p*
$e_{(s, k, p)}$ weight yield factor of liquid part *s* of dish *k*, edible part, prepared by method *p*
n number of ingredients according to recipe for dish *k* (i = 1.....n)

Note: The formulae's 1 - 4 can also be used for other requested portion sizes.

Example for conversion of base recipe to a recipe for 100 g edible portion dish

Rice, polished, boiled

Ingredients (ready-to-cook)	Amount in g	
	base recipe	per100 g edible portion [1]
Rice, long grain, polished	260	32.2
Sodium salt	9	1.1
Total ($U_{(k)}$, $X_{(k, p)}$)	269	33.3
Rice, cooked, edible portion ($U_{(k)}$,$X_{(k, p)}$)	807 [2]	100.0
Water uptake ($G_{(k, p)}$)	538	66.7

[1] calculated by using formula 1; conversion factor ($F_{(k, p)}$): 8.07 (formula 5);
[2] calculated by using weight yield factor ($e_{(k, p)}$): 3.00

Chicken, fried

Ingredients (ready-to-cook)	Amount in g		
	base recipe	per 100 g edible portion including waste [1]	per 100 g edible portion (meat with skin) [2]
Whole chicken, deep frozen, thawed	1000	172.4	133.3
Sodium salt	4.5	0.8	0.8
Pepper, white, powder	0.5	0.1	0.1
Paprika, powder	1.3	0.2	0.2
Total ($U_{(k)}$, $X_{(k, p)}$)	1006.3	173.5	134.4
Chicken, grilled with bones ($V_{(k, p)}$)	785 [3]	134.5	-
Chicken, grilled, meat and skin, ($Z_{(k , p)}$, $Y_{(k, p)}$)	580 [4]	100.0	100.0

[1] calculated by using formula 1; conversion factor ($F_{(k, p)}$): 5.8 (formula 5); [2] calculated by using formula 3;
[3] weight yield factor, with bones ($d_{(f, k, p)}$) = 0.75;
[4] weight yield factor, meat with skin ($e_{(f,k,p)}$) = 0.58

Pot roast pork, with juice

Ingredients (ready-to-cook)	Amount in g		
	base recipe	per 100 g edible portion including waste [1]	per 100 g edible portion [2]
Pork chuck	800	89.5	89.5
Sodium salt	3.5	0.4	0.4
Pepper, black ,powder	0.6	0.1	0.1
Fat (oil)	24.0	2.7	2.7
Total ($U_{(k)}$, $X_{(k, p)}$)	828.1	92.7	92.7
Meat and juice after cooking ($V_{(k, p)}$)	894 [3]	100.0	100.0
Solid part (meat) after cooking ($Z_{(k , p)}$)	563 [4]	63.0	63.0
Liquid part (juice) after cooking ($Z_{(k , p)}$)	331 [5]	37.0	37.0

[1] calculation see formula 1;conversion factor ($F_{(k, p)}$)=: 8.94; [2] calculation see formula 1;
[3] calculated by using weight yield factor ($e_{(k, p)}$) = 1.08; [4] calculated by using weight yield factor, solid part ($e_{(f,k,p)}$) = 0.68; [5] calculated by using weight yield factor, liquid part (juice), $e_{(f, k, p)}$ = 0.40 (see table above)

Pork escallop, breaded ,fried

Ingredients (ready-to-cook)	Amount in g		
	base recipe	per 100 g edible portion including waste [1)]	per 100 g edible portion [2)]
Pork ,,shoulder, leg or neck	680	119.3	119.3
Water	30	5.3	5.3
Breading (convenience product)	80	14.0	14.0
Fat uptake	48	8.4	8.4
Total ($U_{(k)}$, $X_{(k, p)}$)	838	147.0	147.0
Solid part (meat with bread) after cooking ($Z_{(k , p)}$)	570 [3)]	100.0	100.0

[1)] calculated by using formula 1; conversion factor ($F_{(k, p)}$): 5.7 (formula 5); [2)] calculated by using formula 3;
[3)] calculated by using weight yield factor ($e_{(k, p)}$) = 0.68 (see table above)

Appendix B

Examples for calculation of nutrient and energy content of dish

The estimation of the nutrient content per 100 g of dish is based on the amount of ingredients (without waste) for the preparation of 100 g edible portion dish in ready-to-serve condition (see Appendix A), on the data of nutrient content per 100 g edible portion of ingredients and on the food constituent (nutrient) retention factors.
The data of nutrient content in 100 g of the ingredients can be taken from national nutrient data bases. They could be borrowed from other source or be determined by analyse.
To obtain reproducible and comparable results for the nutrient composition of dishes, it may be used the average nutrient retention factors contained in the enclosed tables.
For determination of nutrient content in German dishes SFK-online calculation system [4] for Raw food mixtures have been proved by using the amount of ingredients (without waste) per 100 g edible portion dish. The received nutrient value have to be than solely corrected with an appropriated nutrient retention factor analogous to equations 1 or 3. To calculate nutrient composition of other dishes by using other nutrient data base and also to determine content of sodium chloride, total ash and water the following algorithms have been proved:

Content of nutrient *j* per 100 g edible portion of dish *k* prepared by method *p* in gram, milligram or microgram ($Q_{(j,k,p)}$)

$$Q_{(f,k,p)} = \frac{\sum_{i=1}^{n}(E_{(j,k,p)} \times x_{(i,k,p)}}{100} \times A_{(j,g,p)} \quad (1)$$

Content of sodium chloride *c* per 100 g edible portion of dish *k* prepared by method *p* in gram ($Q_{(c,k,p)}$)

$$Q_{(c,k,p)} = \frac{x_{(n,k,p)} \times E_{(c,k)}}{100} \times A_{(c,g,p)} \quad (2)$$

Content of nutrient *j* in the solid part *f* of 100 g edible portion of dish *k* prepared by method *p*, in gram, milligram or microgram ($q_{(j,f,k,p)}$)

$$q_{(j,f,k,p)} = \frac{\sum_{i=1}^{n}(E_{(j,i,k)} \times x_{(i,k,p)}}{100} \times A_{(j,f,g,p)} \quad (3)$$

Content of sodium chloride *c* in the solid part *f* of 100 g edible portion of dish *k pre*pared by method *p* in gram ($q_{(c,f,k,p)}$)

$$q_{(c,f,k,p)} = \frac{x_{(n,k,p)} \times E_{(c,k)}}{100} \times A_{(c,f,g,p)} \quad (4)$$

Content of nutrient *j* per 100 g edible portion of solid part *f* of dish *k* prepared by method *p*, in gram, milligram or microgram ($Q_{(j,f,k,p)}$)

$$Q_{(j,f,k,p)} = \frac{q_{(j,f,k,p)}}{S_{(f,k,p)}} \times 100 \quad (5)$$

Content of sodium chloride *c* per 100 g edible portion of solid part *f* of dish *k* prepared by method *p* in gram ($Q_{(c,f,k,p)}$)

$$Q_{(c,f,k,p)} = \frac{q_{(c,f,k,p)}}{S_{(f,k,p)}} \times 100 \quad (6)$$

Content of nutrient *j*, in liquid part *s* of 100 g edible portion of dish *k* prepared by Method *p*, in gram, milligram or microgram ($q_{(j,s,k,p)}$)

$$q_{((j,s,k,p)} = Q_{(j,k,p)} - q_{(j,f,k,p)} \quad (7)$$

Content of nutrient *j* per 100 g edible portion of liquid part *s* of dish k prepared by method *p*, in gram, milligram or microgram ($Q_{(j,s,k,p)}$)

$$Q_{(j,s,k,p)} = \frac{q_{(j,s,k,p)}}{L_{(s,k,p)}} \times 100 \quad (8)$$

Note: Content of sodium chloride in liquid part can be calculated analogous to equations 7 and 8. The content of ash should be calculated without added sodium salt. The content of total ash is sum of ash without sodium salt and sodium chloride.

where:

n number of ingredient in recipe of dish k (i = 1...n)

$E_{(j,\ i,\ k)}$ content of nutrient j per 100 g edible portion ingredient i of dish k, in gram, milligram or microgram (see note)

$E_{(c,\ k)}$ content of sodium chloride c per 100 g sodium salt used for preparation of dish k in gram,

$x_{(i,\ k,\ p)}$ quantity of ingredient i in gram for preparation of 100 g edible portion of dish k prepared by method p (equation 10)

$x_{(n,\ k,\ p)}$ quantity of sodium salt n in gram for preparation of 100 g edible portion of dish k prepared by method p (calculated analogous to formulae 10)

$S_{(f,\ k,\ p)}$ quantity of solid part f in gram per 100 g edible portion of dish k prepared by method p (equation 14)

$L_{(s,\ k,\ p))}$ quantity of liquid part s in gram per 100 g edible portion of dish k prepared by method p (equation 15)

$A_{(j\ ,f,\ g,\ p)}$ average nutrient retention factor j in the solid part f of dish k according to food group g prepared by method p

$A_{(c,\ f,\ g,\ p)}$ average absorption factor of sodium chloride c in the solid part of dish k according to food group g prepared by method p

$A_{(j,\ g,\ p)}$ average nutrient retention factor j of dish k according to food group g prepared by method p

$A_{(c,\ g,\ p)}$ average sodium chloride absorption factor c of dish k according to food group g prepared by method p

$d_{(k,\ p)}$ weight yield factor of dish k including waste prepared by method p

$e_{(k,\ p)}$ weight yield factor of dish k edible part prepared by method p

$d_{(f,\ k,\ p)}$ weight yield factor of solid part f of dish k edible part prepared by method p

$e_{(f,\ k,\ p)}$ weight yield factor of edible solid part f of dish k edible part prepared by method p

$x_{(f,\ k,\ p)}$ quantity of sodium salt s used for 100 g edible portion of dish k by method p, in gram

$E_{(NaCl,\ k)}$ content of sodium chloride (NaCl) per 100 g sodium salt used for preparation of dish k

To calculate water and energy content the following algorithms have been proved:

Content of water per 100 g edible portion of dish *k* in gram ($W_{(k,p)}$)

$$W_{(k,p)} = 100 - N_{(k,p)} \tag{12}$$

Content of water per 100 g edible portion of solid part *f* of dish *k* in gram ($W_{(f,k,p)}$)

$$W_{(f,k,p)} = 100 - N_{(f,k,p)} \tag{13}$$

Content of water per 100 g edible portion of liquid part *s* of dish *k* in gram ($W_{(s,k,p)}$)

$$W_{(s,k,p)} = 100 - N_{(s,k,p)} \tag{14}$$

Content of energy in kJ ($E1$) and kcal ($E2$)

$$E1 = (P + C) \times 17 + (F \times 38); \qquad E2 = \frac{E1}{4.184} \tag{15}$$

where:

$N_{(k,p)}$ sum of the content of P, F, C, D, M from 100 g edible portion of dish k prepared by method p in gram

$N_{(f,k,p)}$ sum of the content of P, F, C, D, M from 100 g edible portion of solid part f of dish k prepared by method p in gram

$N_{(s,k,p)}$ sum of the content of P, F, C, D, M from 100 g edible portion of liquid part s of dish k prepared by method p in gram

P = protein; F = fat; C = carbohydrate (incl. organic acids, alcohol); D = dietary fibre;

M = ash (sum of minerals)

Numerical examples for calculation of nutrient composition of dishes are collected in tables 1-3.

Table 1: Data for calculation of nutrient content of boiled rice - Recipe for 100 g edible portion -

Ingredients ($X_{(i,k,p)}$) [1]		Content per 100 g edible portion of ingredients								
kind	(g)	Protein g	Fat g	Carbo-hydrate g	Dietary fibre g	Ash [2] g	Salt (NaCl) g	Potas-sium g	Vitamin B_1 µg	Vitamin B_6 µg
Rice, long grain	32.20	7.36 [3]	0.62 [3]	75.0 [4]	2.7 [4]	0.53 [3]	0.0	109 [3]	60 [3]	150 [3]
Sodium salt	1.16	0.0	0.0	0.0	0.0	0.10	99.9 [4]	40 [4]	0.0	0.0
Nutrient retention factors [5]		0.95	0.95	0.95	0.95	0.70	0.25	0.55	0.50	0.50

[1] see appendix A; [2] without sodium chloride; [3] data from Food Composition Tables [4]; [4] data from own analysis;
[5] average nutrient and sodium chloride retention due to boiling of polished cereals (see table)

$$\text{NaCl} = \frac{99.9 \times 1.16}{100} \times 0.25 = 0.29 \text{ g} / 100 \text{ g dish (edible)}$$

Table 2: Data for calculation of nutrient content of fried chicken

Ingredients without waste ($X_{(i,\,k,\,p)}$) [1]		Content per 100 g edible portion of ingredients								
kind	(g)	Protein g	Fat g	Carbo-hydrate g	Dietary fibre g	Ash [2] g	Salt (NaCl) g	Potas-sium mg	Vitamin B_1 µg	Vitamin B_6 mg
Chicken, whole	133.3	19.0 [3]	14.0 [3]	0.0	0.0	0.93 [3]	0.0	260 [3]	100 [3]	500 [3]
Sodium salt	0.8	0.0	0.0	0.0	0.0	0.10	99.9	40	0.0	0.0
Pepper, white	0.1	10.4	2.10	61.6	14.0	0.50	0.0	70	20	0.0
Paprika, powder	0.2	14.8	13.0	34.9	24.3	3.50	0.0	2340	650	0.0
Nutrient retention factors [4]		1.00	0.75	1.00	1.00	0.95	0.30	0.90	0.60	0.60

[1] see appendix A; [2] without sodium chloride; [3] data from own analysis;
[5] average nutrient and sodium chloride retention due to boiling of polished cereals (see table)

$$\text{Protein} = \frac{(19.0 \times 133.3) + (10.4 \times 0.1) + (14.8 \times 0.2)}{100} \times 1.0 = 25.4 \text{ g / 100 g dish (edible)}$$

Table 3: Data for calculation of nutrient content of roast pork with juice (braised)
- Recipe for 100 g edible portion (see Appendix) -

Ingredients ($X_{(i,\,k,\,p)}$) [1]		Content per 100 g edible portion of ingredients								
kind	(g)	Protein g	Fat g	Carbo-hydrate g	Dietary-fibre g	Ash [2] g	Salt (NaCl) g	Potas-sium mg	Vitamin B_1 µg	Vitamin B_6 mg
Pork meat, chuck	89.44	18.3 [3]	13.8 [3]	0.0	0.0	0.95 [3]	0.0	252 [3]	920 [3]	555 [4]
Sodium salt	0.38	0.0	0.0	0.0	0.0	0.10	99.9 [4]	40 [4]	0.0	0.0
Pepper, black	0.06	10.9 [4]	3.3 [4]	69.8 [4]	5.0 [4]	1.50 [4]	0.0	1260 [4]	110 [4]	0.0
Lard	2.68	0.0	100.0 [3]	0.0	0.0	0.00	0.0	0.0	0.0	0.0
Nutrient retention factors total meat		0.98 0.93	0.98 0.85	1.00 0.00	1.00 0.00	1.00 0.65	1.00 0.40	1.00 0.65	0.60 0.45	0.60 0.45

[1] see appendix A; [2] without sodium chloride [3] data from Food Composition Table [4]; [4] data from own analysis;
[5] average nutrient and sodium chloride retention factor due to braising of pork meat (see table)

$$\text{Fat} = \frac{(13.8 \times 89.44) + (3.3 \times 0.06) + (100 \times 2.68)}{100} \times 0.98 = 14.7 \text{ g / 100 g dish (edible)}$$

The data listed in Table 4 show that nutrient contents calculated according to the present model and determined by chemical analysis are of the same order of magnitude. They confirm earlier findings [1-3]. Differences between analytical and calculated data are largely erratic; they are due to errors in the data of nutrient contents of raw food and in the weight yield and nutrient retention factors. The data available to be used in the calculation method presented should, therefore, be improved. They include recipe information, nutrient data of raw food (ingredients) and specific weight yield and average nutrient retention factors relating to the preparation of dishes.

Table 4: Nutrient composition of selected dishes - Comparison between analytical and calculated results -

Dish / Method		Content per 100 g dish, edible portion									
		Water g	Protein g	Fat g	Carbo-hydrate g	Dietary-fibre g	Ash [2] (total) g	Salt (NaCl) g	Potas-sium mg	Vitamin B_1 µg	Vitamin B_6 µg
Rice, boiled	A	73.2	2.1	0.2	23.2	0.9	0.39	0.25	10	13	16
	C	73.6	2.3	0.2	22.9	0.8	0.41	0.29	19	10	24
	% [1]	+1	+9	0	-1	-11	+5	+16	+90	-23	+50
Broccoli, stewed	A	83.4	3.5	4.8	3.2	3.6	1.48	0.44	292	90	83 [*]
	C	84.8	3.0	4.6	2.8	2,7	1.44	0.44	337	76	82 [*]
	% [1]	+2	-14	- 4	-13	-24	-3	0	+15	-16	-1
Chicken, fried	A	58.8	25.5	14.1	0.1	0	1.51	0.29	290	78	343
	C	59.1	25.4	14.0	0.1	0	1.37	0.24	316	81	400
	% [1]	+1	-1	-1	0	0	-9	-17	+9	+4	+17
Pork escallop (leg) ,breaded fried	A	53.6	25.3	11.2	8.1	-	1.76	0.55	-	792	422
	C	52.9	25.9	11.3	8.0	-	1.86	0.54	-	783	392
	% [1]	-2	+2	+1	-1	-	+6	-2	-	-1	-7
Pork (chuck), braised, with juice	A	68.6	17.3	12.8	0.1	0	1.19	0.38	240	465	233
	C	67.9	16.1	14.7	0.1	0	1.23	0.38	245	494	298
	% [1]	-1	-7	+15	0	0	+3	0	+2	+6	+28

A = analysed results, mean value (10,11); C = calculated (basic data see table 1-3 and other;
[1] = difference ;analysed content = 100 %; [2] = Including sodium chloride; [*] = vitamin C in milligram;

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Appendix C

Description of cooking methods

1 . Cooking by moist heat

Heat transfer from energy source to food surface with water or steam by convection.

- boil , to

Cooking of food in the presence of high quantity of water or water containing liquid in a pot .Temperature of cooking liquid and of food: ~ 100°C ; pressure :~ 0.1 MPa.

- pressure boil , to

Cooking of food in the presence of high quantity of water or water containing liquid in pressure cooker.
Temperature of cooking liquid and of food: ~ 102 -120°C ;pressure :~ 0.11-0.20 MPa.

- microwave boil, to

Cooking of food in the presence of high quantity of water or water containing liquid in a pot by using microwave oven.
Temperature of cooking liquid and of food: ~ 100°C ; pressure :~ 0.1 MPa .

-steam ,to

Cooking of food in vapour from boiling water in a atmospheric steamer pot.
Temperature of steam and of food: ~ 100°C ; pressure :~ 0.1 MPa .

- pressure steam , to

Cooking of food in vapour from boiling water in a pressure steamer.
Temperature of steam and of food: ~ 102 -120°C ;pressure :~ 0.11-0.20 MPa .

- stew , to

Cooking of food in presence of small quantity of water or water containing liquid in a pot or pan.. Temperature of cooking liquid and of food: ~ 100°C ; pressure :~ 0.1 MPa .

- pressure stew ,to

Cooking of food in presence of small quantity of water or water containing liquid in a pressure cooker.
Temperature of cooking liquid and of food: ~ 102 -120°C ;pressure :~ 0.11-0.20 MPa.

- microwave stew, to

Cooking of food in the presence of small quantity of water or water containing liquid in a pot by using microwave oven.
Temperature of cooking liquid and of food: ~ 100°C ; pressure :~ 0.1 MPa .

Cooking times of foods and dishes by moist heat[*)]

Foods and dishes	at ~ 100 °C min	at 102 °C - 125 °C min
milk, cheese and eggs	3 - 5	-
veal, beef	60 - 180	20 - 90
pork, game	40 - 150	10 - 75
poultry (whole)	40 - 150	10 - 75
fish	5 - 30	5 - 15
vegetables, fruits	5 - 60	2 - 20
seeds, legumes	10 - 120	5 - 60
[*)] Cooking time in microwave oven is depending on food quantity		

2. Cooking by dry heat

Heat transfer from energy source to food surface with air, fat, radiation (e.g. infra red) and conduction(e.g. contact grill). Temperatures of cooking medium (fat) or area or metal surface resp. are between 140 °C and 350 °C. The surface of food is usually browned .

- fry in pan , to (saute)

Cooking of food in pan by with a small quantity of added fat. The food surface will mostly browned.

Temperature of fat or oil: 160 °C to 200 °C
Temperature of food core: <100°C
Cooking time: 2-8 min for eggs
4-20 min for meat and fish
3-15 min for vegetables and other foods

- fry in oven , to

Cooking of meat in oven with and without added fat by hot air. The food surface will mostly browned.

Temperature of air in oven: 160 °C to 250 °C
Temperature of food core: <100°C
Cooking time: 30-240 min for meat and meat products

- bake in oven ,to

Baking in oven will usually applied to cook starch reach foods and dishes such as bread, cake, pizza , vegetables, fruits and potatoes.

Temperature of air in oven: 160 °C to 250 °C
Temperature of food core: <100°C
Cooking time: 10-60 min for vegetables, fruits
20-70 min for bread, cake, pizza, potato

- deep fry ,to

Cooking of food in fat or oil deep enough to immerse the food entirely. The food surface will mostly browned.

Temperature of fat or oil: 140 °C to 200 °C
Temperature of food core: <100°C
Cooking time: 4-20 min for meat and fish
3-15 min for vegetables, potatoes and other foodstuffs

- grill, to ; broil, to ; barbecue, to

Cooking of food by direct radiant heat over or under a heat source(e.g. infra red grill , charcoal).The food surface will mostly browned.

Temperature of hot air: 200 °C to 350 °C
Temperature of food core: <100°C
Cooking time: 4-20 min for meat and fish
30-70 min for poultry (whole)
2-15 min for vegetables, potatoes and other foods

- contact fry ,to (griddle)

Cooking of food on a heated heavy metal plate or between two heated heavy metal plates (e.g. contact grill). The food surface will mostly browned.

Temperature of plates: 180 °C to 250 °C
Temperature of food core: <100°C
Cooking time: 4-20 min for meat and fish
2-15 min for vegetables and potatoes

3. Combined cooking procedure
Mixed cooking methods mostly for meat dishes. Frying in fat or air and stewing or steamingresp..

- braise ,to
Cooking of previously browned (fried) food in small quantity of water or water containing liquid in pot (stewing).
Temperature of fat or oil (frying in pan): 180°C to 200 °C
Temperature of cooking liquid (stewing):~ 100°C –120°C ; pressure :~ 0.1 –0.2 MPa .
Temperature of food core: <100°C –115°C
Cooking time: 5-15 min at 180 °C to 200 °C
and 10-180 min at ~100°C –120°C

- fry and steam in oven ,to
Cooking of food in oven first at high temperature until browning of surface
and subsequent in steam .
Temperature of hot air: 160°C - 220 °C
Temperature of steam: ~ 100°C ; pressure :~ 0.1 MPa .
Temperature of food core: <100°C
Cooking time: 10- 20 min at 160 °C-220 °C
and 40-180 min at ~100°C

Glossary of the names of cooking methods

Cooking by moist heat
boil, to
pressure boil , to
microwave boil, to
steam, to
pressure steam, to
stew, to
pressure stew , to
microwave stew, to

Cooking by dry heat
fry in pan ,to (sautė)
fry in oven, to
bake in oven, to
deep fry, to
grill, to (broil ,to)
barbecue ,to
contact fry ,to (griddle)

Combined cooking procedure
braise , to
fry and steam in oven ,to

Glossar der Namen von Garmethoden

Garen mittels feuchter Hitze
kochen ,sieden
druckkochen
Mikrowellenkochen
dämpfen
druckdämpfen
dünsten
druckdünsten
Mikrowellendünsten

Garen mittels trockener Hitze
braten in der Pfanne
braten in Ofen
backen in Ofen
fritieren
grillen (grillen auf dem Rost)
grillen über Holzkohle
kontaktgrillen

Kombiniertes Garverfahren
schmoren
braten und dämpfen in Ofen