

Maisons-Alfort, 4 may 2011

The Director General

OPINION

of the French Agency for Food, Environmental and Occupational Health & Safety

concerning the request to evaluate the risks related to dietary weight-loss practices

1. REVIEW OF THE REQUEST

The French Food Safety Agency (AFSSA) received a formal request on 2 April 2009 from the Directorate General for Health for an assessment of the risks related to dietary weight-loss practices.

2. BACKGROUND

Today, the cult of the body and body image is a social reality which pressurises the individual into accepting aesthetic canons and social norms regarding the body. Moreover, overweight and obesity, which affect respectively 32% and 15% of people over 18 years of age in France, are a major public health problem. One of the consequences of these two phenomena is the development of a range of practices including numerous weight-loss diets, which are often entered into without medical justification or supervision.

Data from the INCA 2¹ study demonstrate the extent of the problem: 50% of women of normal weight were following a weight-loss diet during the survey or had followed one during the previous year.

In this context, the French Agency for Food, Environmental and Occupational Health & Safety (ANSES) carried out an evaluation of the risks related to dietary weight-loss practices, based on a collective adversarial scientific expert appraisal. The appraisal did not involve a benefit-risk assessment based on each individual's specific situation, nor a position on whether or not subjects should follow a diet, nor on the choices to be made. The risks were assessed within the broad categories of diets for which relevant scientific data are available.

This work is intended to provide benchmarks enabling better identification of possible harmful consequences of weight-loss diets, in order for the health authorities to propose a prevention policy as part of the future French National Health and Nutrition Programme (PNNS 3).

¹ Individual and national study on food consumption 2 (2006-07)

3. METHOD OF EXPERT APPRAISAL

The collective expert appraisal was conducted by the “Assessment of the risks related to dietary weight-loss practices” Working Group² whose report was validated by the Expert Committee (CES) on Human Nutrition during its meeting on 30 September 2010. This report was opened to consultation between 25 November 2010 and 15 January 2011, in order to take into account any further scientific contributions for drafting the ANSES Opinion. About 15 contributions were received and made public at the same time as this Opinion. Contributions were received primarily from learned societies and think-tanks (National federation of medical nutrition associations, *Groupe éthique et santé*, think-tanks on obesity and overweight), consumer associations (*Familles de France*), diet promoters and professional organisations. This Opinion summarises the main points in this report and takes account of the insight obtained through the consultation process, and was validated by the Expert Committee (CES) on Human Nutrition at its meeting on 31 March 2011.

4. DISCUSSION

The arguments put forth by the French Agency for Food, Environmental and Occupational Health & Safety are based on the expert report of the “Assessment of the risks related to dietary weight-loss practices” Working Group, which was validated by the Expert Committee (CES) on Human Nutrition, and the findings thereof are presented below:

The collective adversarial expert appraisal was performed in two parts:

- identification and characterisation of weight-loss diets to determine their impact on nutritional intake;
- analysis of the available literature to identify the biological effects of possible nutritional imbalances, and the pathophysiological and psycho-behavioural consequences of weight-loss diets.

In addition to the general population, special attention was paid to specific population categories with particular physiological characteristics and/or who are particularly vulnerable, such as children, adolescents, pregnant women and nursing mothers, the elderly, athletes and individuals engaging in intense physical activity.

The impact of the consumption of food supplements claiming weight-loss effects, methods of using meal replacements, and their use along with weight-loss diets, were not evaluated in this collective expert appraisal due to their widely varying compositions and conditions of use. A subsequent evaluation of the effects of their use appears necessary.

4.1. Identification and characterisation of weight-loss diets

The principle underlying weight-loss diets is to establish an energy deficit (with reference to the needs of the individual) by reducing food intake in order to promote weight loss. These diets are different from balanced diets which cover both the qualitative and quantitative needs of an individual and favour a stable energy balance, and thereby a stable body weight.

Examples of weight-loss diets³, among the most common, were identified. Nutritional analysis of these weight-loss diets, 15 in total, focused on their energy, protein, carbohydrate, fat, vitamin and mineral composition.

² ANSES (2010) Report on the assessment of the risks related to dietary weight-loss practices. <http://www.anses.fr/cgi-bin/countdocs.cgi?Documents/NUT2009sa0099RaEN.pdf>

³ Diets included in this evaluation were selected based on their popularity (frequent mention on the Internet or in books sold in stores or on the Internet): the Atkins Diet, the Sonoma Diet, the Lemon Detox Diet, the Chrononutrition Diet (Dr Delabos), the 1st Personal Diet (Dr Cohen), the Dukan Diet, the Dr Fricker Diet, the Mayo Diet, the South Beach Diet (Dr Agatston), the Montignac Diet, the Ornish Diet, the Scarsdale Diet (Dr Tarnower), the Cabbage Soup Diet, the WeightWatchers Diet, the Zone Diet (Dr Sears).

For each typical day, the food plans recommended by the diets studied was recorded for the different meals of the day: type of food, portion sizes and where applicable, recipes. When portion sizes were not specified, average data from the INCA2 study were applied. Similarly, some diets introduce a notion of flexibility, by allowing unlimited consumption of certain foods. This theoretical variability is difficult to take into account and to model, since it varies among individuals. For the particular case of the Cabbage Soup Diet, for the foods eaten in addition to the soup, quantities were approximated from the photo manual used to estimate portions for the Su.Vi.Max study. The maximum portion size was chosen, since these foods accompany a single bowl of soup.

The amount of sodium added during cooking or during food preparation was taken into account only when its use was specifically mentioned in the books.

This characterisation showed that these examples of weight-loss diets and their different phases can lead to nutritional imbalances and inadequate intakes (see Appendix).

Based on current data, a protein intake of between 0.83 g and 2.2 g/kg/d, i.e. 10 to 27% of mean energy intake estimated at 33 kcal/kg/d, can be considered satisfactory for a sedentary, non-obese adult below 60 years of age with normal renal function, and on a non-restricted diet. Protein intake above 27% of energy intake is considered high⁴. On this basis, ANSES considered as high-protein diet, any non-low-calorie diet recommending protein intake above this threshold of 2.2 g/kg/d.

Nutritional characterisation of these diets or diet phases (see Appendix) demonstrated the following:

- protein intake is higher than the population reference intake (PRI) for the French population for more than 80% of the diet phases. High-protein non-low-calorie diets result in intakes exceeding the upper limits that are considered satisfactory (2.2 g/kg/d);
- the estimated average requirement (EAR) for calcium in adults is not met by 23% of the diet phases. In contrast, two of the diet phases studied involve calcium intakes that are double the PRI;
- for more than half of the diet phases, sodium intake is higher than the limit recommended by the WHO⁵ (5 g/d of salt, i.e. 1967 mg/d of sodium) and in one case, intake corresponds to more than double this recommended limit;
- three out of four diet phases lead to fibre intake below the PRI, sometimes up to ten times lower.

⁴ AFSSA (2007) Protein intake: consumption, quality, requirements and recommendations. <http://www.afssa.fr/Documents/NUT-Ra-Proteines.pdf>

⁵ WHO (2007) Reducing salt intake in populations. Report of a WHO forum and technical meeting. Paris. http://www.who.int/dietphysicalactivity/Salt_Report_VC_april07.pdf

Table: Classification of diets

Diet types	High-protein > 27% ³ of TEI	High-carbohydrate > 55% of TEI	High-fat > 40% of TEI
Extremely low-calorie (< 800 kcal)	Mayo Scarsdale	Lemon detox Cabbage soup	
Very low-calorie (800 -1200 kcal)	Atkins 1 Sonoma 1 (women) Fricker 1, 2 and 3		Atkins 1 Sonoma 1 (women) South Beach 2 Montignac 2
Low-calorie (1200-1500 kcal)	Cohen 1 Fricker 1+ and 3+ South Beach 1	Ornish WeightWatchers	Cohen 1 South Beach 1 Montignac 1 and 1+
Non-low-calorie (> 1500 kcal)	Atkins 2 Cohen 2 Dukan 1, 2 and 3 Fricker 2+		Atkins 2 and 3 Sonoma 1 (men) Chrononutrition Chrononutrition + Cohen 2 Dukan 2 South Beach 3 Zone

This original analysis made it possible to propose a classification of the different diet phases based on intake on the one hand, and contribution of proteins, carbohydrates, and fats to total energy intake, on the other. However, ANSES believes that this analysis cannot be considered as a ranking of the various weight-loss diets evaluated.

4.2. Biological, pathophysiological and psycho-behavioural consequences of weight-loss diets

The review of the literature emphasised the risk of harmful effects on health associated with dietary weight-loss practices. In the absence of homogenous and consistent exposure data, this work focused more on providing a characterisation of risks than on their comprehensive assessment. In particular, these risks include somatic physiological disturbances (bone, muscles, liver and kidneys), profound changes to energy metabolism and the physiological regulation of eating behaviour, as well as psychological disturbances (behavioural eating disorders). Such disruptions often cause a vicious cycle of weight regain in the more or less long term, which may actually be exacerbated by dieting. Other risks were identified for special population groups, particularly malnutrition (elderly subjects), hormonal disorders (adolescents, athletes) and growth disturbances (foetuses, children and adolescents).

The literature review made it possible to determine the main risks associated with the different categories of weight-loss diets.

- *For the general population,*

Weight loss does not only occur at the expense of body fat reserves but rapidly weakens subjects due to loss of lean body mass, particularly in the muscles and bone, regardless of protein intake levels.

Weight-loss practices, particularly if they are repeated over time, have a detrimental effect on bone integrity (bone mass, osteopenia and fracture risk): with an average 1-2% reduction in bone mineral density being observed for a weight loss of 10%.

Weight regain affects 80% of subjects after one year and increases over time. Weight loss leads to a loss of lean body mass (including muscle mass) which causes a decrease in energy expenditure at rest (primary component of energy expenditure). In this way, the energy intake allowing weight to

be maintained after a weight-loss diet is lower than that needed to keep weight stable before dieting. The subject is unable to adapt to this new level of energy intake, which favours weight regain, preferentially in the form of fat reserves.

The main factor in weight stabilisation is physical activity from the start of calorie restriction, and maintenance of activity after the phase of restriction.

Very low-calorie diets may induce sudden death related to cardiac arrhythmia. Weight fluctuation could be a risk factor for cardiovascular events and metabolic syndrome. Very low-calorie diets can cause hepatic inflammation and moderate portal fibrosis and promote the development of gallstones.

High-protein non-low-calorie diets lead to protein intakes that exceed the adequate intake threshold for non-obese adults (2.2 g/kg/d). Consequently, a renal assessment is needed in patients at risk of kidney disease, before any weight-loss diet is started.

Low-carbohydrate diets are often associated with transient gastrointestinal disorders, particularly constipation, related to a decrease in fibre intake.

Depression and loss of self-esteem are common psychological consequences of repeated failures in dieting. In terms of behaviour, the syndrome of cognitive restraint, leading to a reduction in daily food intake to reach a weight below a subject's spontaneous weight and to maintain it, induces a disruption in eating behaviour which increases the risk of weight regain, even to levels higher than the initial weight.

- *For specific population groups,*

Energy restriction during pregnancy (2nd and 3rd trimesters) and the associated nutritional deficiencies involve risks for the course of the pregnancy, may result in slower foetal development and growth, and can have effects on the subsequent health of the children, including in adulthood. Intake should never fall below 1500 kcal/day.

In nursing mothers, the nutritional value of breast milk is only slightly affected by the maternal diet, with the exception of iodine content, certain water-soluble vitamins and long-chain (omega-3) polyunsaturated fatty acids. It is more the level of milk production that is affected by protein-energy restriction with a resulting risk of slow growth and development of the new-born. Postpartum weight loss therefore requires weight control before the start of pregnancy, appropriate weight gain during pregnancy and, after delivery, the return to an active lifestyle and not a restrictive diet.

In children and adolescents, calorie restriction, whether or not associated with protein restriction, can cause slow weight gain and growth, as well as slow pubertal development. This population group is also subject to the risks described for the general population, along with those of primary or secondary amenorrhea, tendinitis, bone demineralisation and clinical iron deficiency, particularly in young female athletes.

The negative effects of weight loss appear to be more marked in the elderly, particularly concerning loss of muscle mass and bone demineralisation.

In sedentary subjects and sports enthusiasts, engaging in physical activity and following a weight-loss diet at the same time involves in the short term:

- cardiovascular risks when a sedentary subject, with vascular risk factors, resumes physical activity after several years;
- a risk of episodes (hypoglycaemic, vagal, and/or aggravated by dehydration) when food restriction is significant.

In athletes engaging in intense physical and sport activities, particularly those following a diet intended to maintain low body fat (sports in which weight control is a success factor), qualitative changes in the diet are associated with hormonal disturbances (reduced blood testosterone levels, oestrogen deficiency) which may be harmful (cycle disorders, loss of bone mass in women). These disorders are related to calorie restriction and not to exercise-related stress.

ANSES concludes that seeking to lose weight without formal medical indication involves risks and exposed populations should be informed of these risks. Individuals who intend to lose weight require specialised, appropriate care, preferably as part of a multidisciplinary approach (treating physician, dietician, endocrinologist, doctor specialising in nutrition, physical activity specialist, psychologist). The report also highlights that changes in eating habits should be combined with the introduction, maintenance or increase of regular physical activity.

5. CONCLUSION

This study enabled an assessment to be conducted of the risks related to dietary weight-loss practices. The French Agency for Food, Environmental and Occupational Health & Safety underlines the fact that this analysis did not involve a benefit-risk assessment based on each individual's specific situation. In addition, it should be borne in mind that excess weight requires medical advice and personalised care, and in most cases, a change in eating habits.

ANSES concludes that following a weight-loss diet is not a trivial act. The risk of harmful effects on health of varying severity should not be neglected.

This study demonstrates the clinical, biological, behavioural and psychological risks related to dietary weight-loss practices, based on the scientific literature.

The following recommendations can be issued following this assessment:

to the population groups affected

- Seeking to lose weight without formal medical indication bears risks, especially when it involves unbalanced eating habits with limited variety. Undertaking a weight-loss programme therefore requires specialised medical supervision.
- This supervision must be adapted to the patient's weight profile (BMI, waist circumference):
 - in the absence of overweight: weight-loss diets are risk practices, whether or not they are recommended by doctors. The public should therefore be warned of the adverse short-, medium- or long-term consequences of following these diets, especially since they are unbalanced, associated with severe behavioural eating disorders, and may eventually lead to possibly irreversible weight gain;
 - the management of obesity, overweight, or significant weight gain requires an accurate diagnosis of the causes, an analysis of the context and an evaluation of the consequences: the indication whether or not to lose weight should be assessed, and the objectives and the means to be implemented defined. These are not limited merely to management of diet but should aim for an appropriate and cautious reduction in weight, planned in good time (in order to address the causal factors) and then stabilised by the appropriate means, while attempting to maintain physical and psychological health in the medium and long term, taking into account aspects related to pleasure and enjoyment in eating.
- Stabilisation of weight is very closely related to changes in eating habits over time, and must be combined with the introduction, maintenance or increase of regular physical activity.
- Obesity is a multifactorial chronic disease and its management requires a multidisciplinary approach (physician, dietician, psychologist, etc.).

with regard to assessment and research

- The analysis of the potential risks related to dietary weight-loss practices should be supplemented by:
 - an assessment of the use of dietetic products intended for very low-calorie diets such as meal replacements;
 - an assessment of the consumption of food supplements claiming weight-loss effects.
- Several types of studies and research needed for the weight-loss diet risk assessment could be considered by acquiring data on:
 - the benefits and risks of these diets, changes in physical and mental health, and weight in the medium (2 years) and long term (10 years), and the analysis of nutritional intakes and status (vitamins and minerals, fatty acids, etc.) in subjects with or without overweight, following weight-loss diets, or behavioural and/or educational approaches of another type, with or without medical supervision. Such work should take into account the different types of diets and population groups;
 - the key biological, psycho-behavioural and social determinants of weight gain and regain.

The Director General

Marc MORTUREUX

KEY WORDS

Weight-loss diet, low-calorie, low-fat, high-protein, low-carbohydrate, physical activity, biological risks, psychological risks.

APPENDIX

Tables 1 and 2 provide a summary, respectively for women and men, of the dietary intakes from the various diets. The dietary intake values indicated for the different diets are compared with those from the INCA2 study, the French population reference intakes (PRI [ANC]), the estimated average requirements (EARs [BNM]) and for sodium only, the recommended intake from the WHO.

Table 1: Dietary intake provided by each weight-loss diet, for women⁶

	Energy (kcal/d)	Energy (kJ/d)	Lipids (g/d)	Lipids %TEI	Proteins (g/d)	Proteins %TEI	Carbohydrates (g/d)	Carbohydrates %TEI	Fibres (g/d)	Iron (mg/d)	Calcium (mg/d)	Magnesium (mg/d)	Potassium (mg/d)	Selenium (µg/d)	Sodium (mg/d)	Vitamin B9 (µg/d)	Vitamin C (mg/d)	Vitamin D (µg/d)	Vitamin E (mg/d)
Atkins1	1152		75	59	102	35	13	5	3	10,4	294	126	1734		2934	135	67,0		3
Atkins2	1627		105	58	134	33	35	9	8	12,6	1701	294	2562		4046	391	95,0		7
Atkins3	1990		114	52	125	25	95	19	13	8,7	889	233	3339		3604	282	226,0		10
Sonoma1	1127	4718	58	47	88	31	60	21	14	11,5	451	292	1957	66	2011	271	70,5	2,3	19
Sonoma2	1415	5954	50	32	86	24	148	42	33	13,2	869	386	3987	72	3932	683	605,5	0,1	12
Chrononut	2419	10141	111	41	138	23	214	35	28	18,3	1034	339	3834	72	2524	308	85,0	1,8	9
Chrononut+	2638	11051	126	43	155	23	218	33	28	20,0	1121	360	4124	85	3073	388	88,3	2,9	10
Cohen1	1261	5255	83	59	87	27	43	14	14	11,5	1057	217	1741	40	2299	309	46,7	5,7	15
Cohen2	1504	6303	73	44	102	27	107	28	22	14,3	980	312	3764	42	1598	471	147,3	0,5	7
Lemon déttox	574	2405	1	1	1	1	133	93	2	3,5	353	75	788	9	63	26	81,6	0,0	0
Dukan1	1844	7751	68	33	246	53	58	13	3	18,6	2013	403	4178	149	5243	696	66,8	5,6	11
Dukan2	1873	7855	86	41	217	46	53	11	3	14,5	1596	318	3612	206	3306	456	26,3	23,0	13
Dukan3	2233	9370	97	39	230	41	104	19	10	16,7	1874	401	4054	215	3663	519	53,0	23,2	14
Fricker1	940	3945	42	40	95	40	45	19	9	6,8	1118	224	2254	53	1935	44	129,7	1,6	8
Fricker1+	1207	5078	44	33	111	37	88	29	13	7,8	1484	276	3168	58	2056	559	209,2	2,0	9
Fricker2	1101	4633	37	30	95	35	95	34	11	9,6	896	216	2664	79	1633	305	35,8	0,4	11
Fricker2+	1531	6450	45	27	114	30	163	42	22	12,4	1305	317	4175	85	1811	595	223,2	0,9	13
Fricker3	1035	4349	36	31	71	28	105	41	17	9,5	498	199	2256	42	1288	299	65,6	3,5	6
Fricker3+	1392	5859	45	29	90	26	157	45	25	11,3	958	286	3614	49	1508	455	147,9	3,8	8
Mayo	668	2792	35	47	55	33	32	19	10	9,6	397	141	1638	41	691	377	91,5	4,3	4
South Beach1	1287	5379	75	52	108	34	44	14	16	11,6	1254	344	3643	89	4184	509	206,8	1,2	13
South Beach2	1150	4834	64	50	65	23	72	25	23	8,3	1507	246	2496	40	2140	492	288,8	0,4	10
South Beach3	1515	6335	84	50	94	25	90	24	19	10,3	1071	302	3200	60	2613	394	196,5	2,1	9
Montignac1	1317	5507	70	48	89	27	80	24	18	11,8	1008	273	3417	64	1963	264	100,2	0,4	9
Montignac1+	1383	5788	70	46	89	26	94	27	18	11,9	1014	275	3455	64	1967	264	108,2	0,4	9
Montignac2	1143	4770	56	44	44	15	83	29	20	11,0	521	202	2734	42	1263	315	100,4	2,3	10
Ornish	1273		13	9	48	15	258	81	38	24,0	1053	477	4026		3358	615	380,0		7
Scarsdale	700	2943	24	31	65	37	54	31	7	5,9	190	145	1961	44	984	148	95,3	4,3	5
Cabbage soup	594	2513	10	15	42	28	82	55	35	11,0	976	313	3484	13	2169	416	423,4	0,0	6
Weightwatchers	1462		42	26	73	20	207	57	26	28,0	1147	325	3773		2243	636	207,0		29
Zone	1637	6856	75	41	108	26	108	27	43	15,4	1007	355	4255	56	1151	822	381,1	2,8	11
Inca2	1855	7754	80	39	74	16	199	43	16	11,5	850	262	2681	48	2533	268	94,3	2,4	11
ANC*				35-40	0,83 g/kg			50-55	25	16,0	900	360		50,0		300	110,0	5,0	12,0
BNM*										12,3	693	299		38,5		213	84,7	3,9	9,2
2007 WHO value*														1967					

Notes:

- Fibre: cells shaded in red correspond to intakes below the PRI.
- Iron, calcium, magnesium, selenium, vitamins B9, D, E and C: cells shaded in red correspond to intakes below the EAR. Cells shaded in yellow correspond to intakes above the PRI.

⁶ For the Atkins, Ornish and WeightWatchers diets, the dietary intake values come from the publication by Freedman et al. (2001), which does not specify vitamin D, selenium and energy intakes in kJ.

- Sodium: cells whose values are in red correspond to intakes above the value recommended by the WHO (5 g/d of salt, i.e. 1967 mg/d of sodium).
- TEI: Total energy intake
- * Only the reference values used are indicated in the table.

Table 2: Dietary intake provided by each weight-loss diet, for men ⁷

	Energy (kcal/d)	Energy (kJ/d)	Lipids (g/d)	Lipids %TEI	Proteins (g/d)	Proteins %TEI	Carbohydrates (g/d)	Carbohydrates %TEI	Fibres (g/d)	Iron (mg/d)	Calcium (mg/d)	Magnesium (mg/d)	Potassium (mg/d)	Selenium (µg/d)	Sodium (mg/d)	Vitamin B9 (µg/d)	Vitamin C (mg/d)	Vitamin D (µg/d)	Vitamin E (mg/d)
Atkins1	1152		75	59	102	35	13	5	3	10,4	294	126	1734		2934	135	67,0		3,0
Atkins2	1627		105	58	134	33	35	9	8	12,6	1701	294	2562		4046	391	95,0		7,0
Atkins3	1990		114	52	125	25	95	19	13	8,7	889	233	3339		3604	282	226,0		10,0
Sonoma1	1602	6681	101	57	107	27	65	16	20	15,2	650	478	2645	67,7	2012	310	70,7	2,3	38,6
Sonoma2	1415	5954	50	32	86	24	148	42	33	13,2	869	386	3987	72,5	3932	683	605,5	0,1	11,8
Chrononut	2419	10141	111	41	138	23	214	35	28	18,3	1034	339	3834	72,0	2524	308	85,0	1,8	9,1
Chrononut+	2638	11051	126	43	155	23	218	33	28	20,0	1121	360	4124	84,6	3073	388	88,3	2,9	9,8
Cohen1	1261	5255	83	59	87	27	43	14	14	11,5	1057	217	1741	40,1	2299	309	46,7	5,7	14,7
Cohen2	1504	6303	73	44	102	27	107	28	22	14,3	980	312	3764	42,3	1598	471	147,3	0,5	7,1
Lemon détox	574	2405	1	1	1	1	133	93	2	3,5	353	75	788	9,0	63	26	81,6	0,0	0,2
Dukan1	1844	7751	68	33	246	53	58	13	3	18,6	2013	403	4178	148,8	5243	696	66,8	5,6	10,7
Dukan2	1873	7855	86	41	217	46	53	11	3	14,5	1596	318	3612	205,7	3306	456	26,3	23,0	13,0
Dukan3	2233	9370	97	39	230	41	104	19	10	16,7	1874	401	4054	214,9	3663	519	53,0	23,2	13,9
Fricker1	940	3945	42	40	95	40	45	19	9	6,8	1118	224	2254	52,8	1935	44	129,7	1,6	8,2
Fricker1+	1207	5078	44	33	111	37	88	29	13	7,8	1484	276	3168	57,5	2056	559	209,2	2,0	9,4
Fricker2	1101	4633	37	30	95	35	95	34	11	9,6	896	216	2664	79,4	1633	305	35,8	0,4	11,1
Fricker2+	1531	6450	45	27	114	30	163	42	22	12,4	1305	317	4175	85,1	1811	595	223,2	0,9	13,3
Fricker3	1035	4349	36	31	71	28	105	41	17	9,5	498	199	2256	42,3	1288	299	65,6	3,5	6,1
Fricker3+	1392	5859	45	29	90	26	157	45	25	11,3	958	286	3614	48,5	1508	455	147,9	3,8	8,3
Mayo	668	2792	35	47	55	33	32	19	10	9,6	397	141	1638	41,3	691	377	91,5	4,3	4,2
South Beach1	1287	5379	75	52	108	34	44	14	16	11,6	1254	344	3643	89,5	4184	509	206,8	1,2	12,7
South Beach2	1150	4834	64	50	65	23	72	25	23	8,3	1507	246	2496	39,6	2140	492	288,8	0,4	9,7
South Beach3	1515	6335	84	50	94	25	90	24	19	10,3	1071	302	3200	59,8	2613	394	196,5	2,1	8,9
Montignac1	1317	5507	70	48	89	27	80	24	18	11,8	1008	273	3417	64,2	1963	264	100,2	0,4	9,3
Montignac1+	1383	5788	70	46	89	26	94	27	18	11,9	1014	275	3455	64,4	1967	264	108,2	0,4	9,3
Montignac2	1143	4770	56	44	44	15	83	29	20	11,0	521	202	2734	41,7	1263	315	100,4	2,3	10,0
Ornish	1273		13	9	48	15	258	81	38	24,0	1053	477	4026		3358	615	380,0		7,0
Scarsdale	700	2943	24	31	65	37	54	31	7	5,9	190	145	1961	44,0	984	148	95,3	4,3	4,7
Cabbage soup	594	2513	10	15	42	28	82	55	35	11,0	976	313	3484	12,8	2169	416	423,4	0,0	6,2
Weightwatchers	1462		42	26	73	20	207	57	26	28,0	1147	325	3773		2243	636	207,0		29,0
Zone	2471	10316	144	53	130	21	139	22	48	18,7	1093	424	4901	64,1	1118	915	435,8	2,9	18,7
Inca2	2500	10450	100	36	100	16	262	42	19	14,9	984	325	3287	58,8	3447	307	91,3	2,7	11,9
ANC*				35-40	0,83 g/kg			50-55	25	9,0	900	420		60,0		330	110,0	5,0	12,0
BNM*										6,9	693	349		46,2		234	84,7	3,9	9,2
2007 WHO value*														1967					

Notes:

- Fibre: cells shaded in red correspond to intakes below the PRI.
- Iron, calcium, magnesium, selenium, vitamins B9, D, E and C: cells shaded in red correspond to intakes below the EAR. Cells shaded in yellow correspond to intakes above the PRI.
- Sodium: cells whose values are in red correspond to intakes above the value recommended by the WHO (5 g/d of salt, i.e. 1967 mg/d of sodium).
- TEI: Total energy intake

*Only the reference values used are indicated in the table.

⁷ For the Atkins, Ornish and WeightWatchers diets, the dietary intake values come from the publication by Freedman et al. (2001), which does not specify vitamin D, selenium and energy intakes in kJ.