

NUTRIENT CONTENTS IN CANNED FOOD  
PRODUCTS FOR INFANTS  
I. THE CONTENT OF PROTEIN,  
FAT AND B-VITAMINS

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ABSTRACT

Six canned dinner products to infants aged 3 months, 11 products to infants aged 4-5 months and 11 products to infants aged 8 months, all available on the Norwegian market, were analysed for water, protein, fat, carbohydrate, ash, thiamine, riboflavine, niacin, pantothenic acid, pyridoxine, biotin and vitamin B<sub>12</sub>. Five of the products available were based on fish. The results are given in 4 tables including calculated energy percentages of protein, fat and carbohydrate. The products contained  $84 \pm 2.6\%$  of water, and gave 450-1100, ave. 650 kcal/kg, or 5 to 10 percent of infants' daily energy intakes, calculated on the meal sizes given by the manufacturers. The protein energy contents were within the recommended values, the fat energy contents low and the carbohydrate energy contents high, up to 82%, based on the extensive use of potatoes in the products.

The daily intakes of thiamine, riboflavine, niacin and pyridoxine for which recommended daily allowances were available, covered with few exceptions 1-20% of the RDA-values in the suggested meal sizes. Of the products based on fish only «cod roe and vegetables» provided more than minor amounts of vitamins except for vitamin B<sub>12</sub>. Fish products together with liver products were considered good sources of vitamin B<sub>12</sub>.

INTRODUCTION

The use of industrially produced infant foods has grown considerably during the latter decades. This has focussed the attention on their nutritional quality with respect to protein, vitamins and elements. EGGUM (1977) found in a study on Danish infant dinner foods that sterilization had a serious negative effect on the quality of protein. OMANG (1978) found Norwegian food products for infants to be low in zinc and copper. Industrially produced infant foods are exposed to heat treatment during processing and this may also affect the contents of vitamins in the products.

At the time this study was initiated, only 5 of 28 industrially produced dinner combinations on the Norwegian market were based on fish. As we

wished to evaluate these products relative to the complete range of such products, an extensive analysis was carried out on their contents of B-vitamins and major and minor elements. This first paper from the study gives data for the contents of water, protein, fat, ash, carbohydrates, thiamine, riboflavin, niacin, pyridoxine, pantothenic acid, vitamin B<sub>12</sub> and biotin in the 28 products, and evaluate the intake of vitamins relative to accepted recommended daily allowances (RDA values). A subsequent paper presents corresponding results on the contents of major and minor elements in the products (JULSHAMN and LIED, 1983).

#### MATERIAL AND METHODS

Ten portions (glasses, cans) of each product were randomly sampled in each of 3 foodmarkets in Bergen, Norway. Thus, each product was represented by 30 portions pooled into one sample. Two aliquots were taken for analysis: one was kept frozen and used for the water and vitamin determinations while the other after freeze-drying was used for the determinations of protein, fat, ash and elements.

Protein was determined as N  $\times$  6.25 as described by CROOKE and SIMPSON (1971). Fat was determined by Soxhlet extraction with diethyl ether followed by weighing the fat fraction. Water was determined by drying at 105°C for 24 hrs and ash was determined by ashing at 600°C for 24 hrs. The content of carbohydrate was calculated by difference, and the net energy content calculated by applying the factors 4.0 kcal/g for protein and carbohydrate and 9.0 kcal/g for fat.

All vitamins were determined by microbiological growth assays. Thiamin was determined with *Lactobacillus viridescens* (ATCC 12706) according to DEIBEL et al. (1957), riboflavin was determined with *Leuconostoc mesenteroides* (ATCC 10100) according to BARTON-WRIGHT (1963), niacin and pantothenic acid were determined with *Lactobacillus plantarum* (ATCC 8014) according to AOAC Methods (1980), biotin was determined with *Lactobacillus plantarum* according to Pharmacopoea Nordica (1960), pyridoxine was determined with *Saccharomyces carlsbergensis* (ATCC 9080) according to AOAC (1980) and vitamin B<sub>12</sub> with *Leuconostoc mesenteroides* (ATCC 4797) using an assay growth medium from Ferrosan, Denmark.

#### RESULTS AND DISCUSSION

The contents of *water, protein, fat, carbohydrate, ash* and *energy*, and ratios of protein energy, fat energy and carbohydrate energy to total energy in the 28 products are summarized in Table 1. The water content in the products averaged 84.2%  $\pm$  2.6 (S.D). The energy content of the products varied

between 450 and 1100 kcal/kg, with an average of 650 kcal/kg. Calculated on the suggested meal sizes of 50 g up to six months of age, and 100 g from eight months of age, these dinner products would give 5 to 10 percent of the daily energy intakes of infants, according to estimates by Statens Ernæringsråd (Norwegian National Nutrition Council, 1981). Statens Ernæringsråd (1981) recommended that 7–16%, 35–55% and 35–50% of the food energy should be supplied by protein, fat and carbohydrates, respectively, to infants of 0–6 months of age. Correspondingly to children of 6–12 months of age, protein, fat and carbohydrates should account for respectively 10–20%, 35–45% and 40–55% of the total energy intake. With four exceptions the protein energy in the products corresponded well with these recommendations, with values between 12.7% and 27 percent. High protein energy contents, 41–46% were found in the products «cod and carrot», «fish with tomato and vegetables», «meat balls» and «fish balls». All products except «ham and spaghetti» had fat energy contents lower than the recommended values with widely varying values between 2.5 and 28 percent. The dinner products were rich in carbohydrate, due to the use of starch, mainly potatoes, as a thickening agent. In 22 of the products the major part of the food energy was supplied by carbohydrates at levels between 55 and 82 percent. Six products, based on fish, turkey, ham and meat balls had carbohydrate energy levels between 40 and 50 percent, corresponding to the values recommended.

The contents of *thiamine*, *riboflavin*, *niacin*, *pyridoxin*, *pantothenic acid*, *biotin* and *vitamin B<sub>12</sub>* are given in Tables 2–4. The thiamine contents in the analysed products ranged from 0.09 to 1.30 mg/kg, giving thiamine densities in the meals of 1.13 to 1.64 mg/1000 kcal. (Table 2.) The values for riboflavine were with one exception in the same range (0.16–1.60 mg/kg) resulting in riboflavin densities of 0.24 to 2.26 mg/1000 kcal. The contents of niacin varied from 4.87 to 16.8 mg/kg corresponding to 6.62 to 25.5 mg/1000 kcal. (Table 3.) For infants aging 0–6 and 6–12 months Statens Ernæringsråd (1981) has recommended daily intakes of thiamine, riboflavine and niacin of 0.3–0.5 mg, 0.4–0.6 mg and 5–8 mg, respectively, corresponding to vitamin densities in the food of 0.5, 0.6 and 7 mg per 1000 kcal, respectively. The densities of thiamine and riboflavin were below 0.5 and 0.6 mg/1000 kcal in 11 of the 28 products, while densities of niacin were less than 7 mg/1000 kcal in 3 of the 28 products. Calculated on the suggested daily meal size of 50 g resp. 100 g however, the products would supply not more than 1.5 to 26% of the recommended daily allowances (RDA) of thiamine, riboflavine and niacin with the exception of a liver product giving 62% of the RDA-value for riboflavin.

The contents of pyridoxine ranged from 0.10 to 0.90 mg/kg wet weight or 1.80 to 43.7 mg/kg protein. The daily intake from these dinners would cover not more than 1.6 to 15.0% of the recommended daily allowances of 0.3 and 0.6 mg for infants up to 6 months and 6–12 months, respectively (Statens Ernæringsråd, 1981). The content of pantothenic acid varied from 0.58 to 4.90

Table 1. The contents of water, protein (N x 6.25), fat, carbohydrates, ash and energy and the percentage levels of energy of protein, fat and carbohydrates of total energy in canned dinner products to infants in different age groups. The values are based on wet weights.

Age group	Sample	Water content %	Protein g/kg	Fat-g/kg	Carbo-hydrates g/kg	Ash g/kg	Kcal/kg	PE/TE %	FE/TE %	CE/TE %
3 months	Veal and vegetables									
	<i>Kalv med grønnsaker</i> .....	85.7	20.6	11.4	102.1	7.9	594.6	13.9	17.3	68.7
	Chicken in bouillon									
	<i>Kylling i kraft</i> .....	83.1	31.5	20.6	106.3	10.1	737.3	17.1	25.1	57.7
	Lamb and vegetables									
	<i>Lam og grønnsaker</i> .....	85.0	20.7	16.7	104.5	8.2	652.0	12.7	23.1	64.1
	Mixes vegetables									
	<i>Blandede grønnsaker</i> .....	81.8	23.2	6.4	141.2	10.9	716.4	13.0	8.1	78.9
4-5 months	Vegetables and lamb									
	<i>Grønnsaker og lam</i> .....	86.0	23.2	9.9	99.4	7.4	580.6	16.0	15.5	68.5
	Vegetables and liver									
	<i>Grønnsaker og lever</i> .....	88.7	18.6	5.9	81.8	6.1	455.8	16.3	11.8	71.9
	Veal and vegetables									
	<i>Kalv med grønnsaker</i> .....	82.5	31.3	21.9	113.8	7.8	778.3	16.1	25.4	58.5
	Chicken, rice and vegetables									
	<i>Kylling med ris og grønnsaker</i> .....	83.6	25.8	20.5	110.2	7.2	729.6	14.2	25.4	60.4
Cod and carrot										
<i>Torsk med gulrot</i> .....	83.2	69.1	9.3	79.4	9.9	679.3	40.7	12.4	46.8	
Cod roe and vegetables										
<i>Torskerogn med grønnsaker</i> .....	83.0	48.0	11.8	102.1	8.1	707.5	27.1	15.1	57.7	
Fish, tomato and vegetables										
<i>Fisk og tomater og grønnsaker</i> .....	85.6	67.0	8.9	59.3	8.3	586.0	45.8	13.7	40.5	
Meat balls										
<i>Kjøttboller</i> .....	80.2	94.0	17.0	77.5	9.0	839.5	44.8	18.2	36.9	
Mixed vegetables										
<i>Grønnsaksmiddag</i> .....	86.6	17.0	2.7	107.9	6.1	524.1	13.0	4.7	82.3	
Turkey and vegetables										
<i>Kalkun med grønnsaker</i> .....	85.5	36.3	20.6	81.3	6.6	656.4	22.2	28.3	49.5	

Age group	Sample	Water content %	Protein g/kg	Fat g/kg	Carbohydrates g/kg	Ash g/kg	Kcal/kg	PE/TE %	FE/TE %	CE/TE %
	Vegetables and beef									
	<i>Grønnsaker med oksejøtt</i> .....	85.7	33.0	13.2	89.5	7.2	609.6	21.7	19.6	58.7
	Vegetables and liver									
	<i>Grønnsaker med lever</i> .....	87.6	19.7	6.2	91.4	6.3	501.2	15.8	11.2	73.0
	Fish balls									
	<i>Fiskeboller</i> .....	85.0	69.9	7.0	66.1	6.9	607.8	46.0	10.5	43.5
8 months	Beef and vegetables									
	<i>Oksejøtt med grønnsaker</i> .....	86.3	27.6	7.6	95.1	6.0	560.4	19.7	12.4	67.9
	Veal and vegetables									
	<i>Kalv med grønnsaker</i> .....	85.1	29.4	9.8	101.8	8.2	613.6	19.2	14.5	66.3
	Chicken and vegetables									
	<i>Kylling med grønnsaker</i> .....	81.3	34.6	15.1	129.3	7.8	791.8	17.5	17.2	65.3
	Cod and vegetables									
	<i>Torsk med grønnsaker</i> .....	82.8	38.8	15.5	110.1	7.5	735.6	21.1	18.0	59.9
	Ham and spaagetti									
	<i>Skinke med spaghetti</i> .....	78.4	44.4	54.3	108.5	8.4	1 101.4	16.3	44.2	39.4
	Lamb and vegetables									
	<i>Lam med grønnsaker</i> .....	86.2	24.8	7.1	98.9	7.1	559.3	17.8	11.5	70.7
	Liver, bacon and vegetables									
	<i>Lever og bacon med grønnsaker</i> .....	79.8	31.1	12.2	148.9	9.2	830.7	15.0	13.3	71.7
	Liver and vegetables									
	<i>Lever med grønnsaker</i> .....	83.0	33.8	1.8	126.9	6.9	659.6	20.5	2.5	77.0
	Roast venison and vegetables									
	<i>Dyrestek med grønnsaker</i> .....	82.5	40.7	11.7	113.9	8.3	724.3	22.5	14.6	62.9
	Summer vegetables and ham									
	<i>Sommergrønnsaker med skinke</i> .....	88.5	20.8	15.6	69.4	6.4	501.6	16.6	28.0	55.4
	Turkey, tomato and rice									
	<i>Kalkun med tomatis</i> .....	86.0	35.0	8.2	89.6	7.0	573.3	24.4	13.0	62.6

Table 2. The contents of thiamine and riboflavine in canned dinner products to infants of different age groups. The values are based on wet weights.

Age group	Sample	Thiamine			Riboflavine		
		mg/kg	mg/1 000 kcal	% of RDA <sup>1</sup>	mg/kg	mg/1 000 kcal	% of RDA <sup>1</sup>
3 months	Veal and vegetables						
	<i>Kalv med grønnsaker</i> . . . . .	0.76	1.28	12.7	0.52	0.87	6.5
	Chicken in bouillon						
	<i>Kylling i kraft</i> . . . . .	0.18	0.24	3.0	0.25	0.34	3.1
	Lamb and vegetables						
	<i>Lam og grønnsaker</i> . . . . .	0.69	1.06	11.5	0.35	0.54	4.4
	Mixed vegetables						
	<i>Blandede grønnsaker</i> . . . . .	0.61	0.85	10.2	0.17	0.24	2.1
4–5 months	Veal and vegetables						
	<i>Kalv med grønnsaker</i> . . . . .	0.18	0.23	3.0	0.38	0.49	4.6
	Chicken, rice and vegetables						
	<i>Kylling med ris og grønnsaker</i> . . . . .	0.50	0.69	8.3	0.57	0.78	7.1
	Cod and carrot						
	<i>Torsk med gulrot</i> . . . . .	0.09	0.13	1.5	0.77	1.13	9.6
	Cod roe and vegetables						
	<i>Torskerogn med grønnsaker</i> . . . . .	1.16	1.64	19.4	1.60	2.26	20.0
4–5 months	Fish, tomato and vegetables						
	<i>Fisk med tomat og grønnsaker</i> . . . . .	0.11	0.19	3.7	0.26	0.44	3.3
	Meat balls						
	<i>Kjøttboller</i> . . . . .	0.37	0.44	6.2	0.60	0.71	7.5
	Mixed vegetables						
	<i>Grønnsakmiddag</i> . . . . .	0.80	1.53	13.3	0.48	0.92	6.0
	Tyrkey and vegetables						
	<i>Kalkun med grønnsaker</i> . . . . .	0.16	0.24	2.7	0.40	0.61	5.0

Age group	Sample	Thiamine			Riboflavine		
		mg/kg	mg/1 000 kcal	% of RDA <sup>1</sup>	mg/kg	mg/1 000 kcal	% of RDA <sup>1</sup>
	Vegetables and beef <i>Grønnsaker med oksekjøtt</i> .....	0.47	0.77	7.8	0.26	0.43	3.3
	Vegetables and liver <i>Grønnsaker med lever</i> .....	0.35	0.70	5.8	1.47	2.93	18.4
	Fish balls <i>Fiskeboller</i> .....	0.10	0.16	1.7	0.16	0.26	2.0
8 months	Beef and vegetables <i>Oksekjøtt med grønnsaker</i> .....	0.57	1.02	11.4	0.33	0.59	5.5
	Veal and vegetables <i>Kalv med grønnsaker</i> .....	0.50	0.81	10.0	0.64	1.04	10.7
	Chicken and vegetables <i>Kylling med grønnsaker</i> .....	0.42	0.53	8.4	0.29	0.37	4.8
	Cod and vegetables <i>Torsk med grønnsaker</i> .....	0.12	0.16	2.4	0.46	0.62	7.7
	Ham and spaghetti <i>Skinke med spaghetti</i> .....	1.30	1.18	26.0	0.70	0.64	11.7
	Lamb and vegetables <i>Lam med grønnsaker</i> .....	0.12	0.21	2.4	0.23	0.41	3.8
	Liver, bacon and vegetables <i>Lever og bacon med grønnsaker</i> .....	0.33	0.40	6.6	1.33	1.60	22.2
	Liver and vegetables <i>Lever med grønnsaker</i> .....	0.71	1.08	14.2	3.71	5.62	61.8
	Roast venison and vegetables <i>Dyrestek med grønnsaker</i> .....	0.63	0.87	21.0	0.82	1.13	13.7
	Summer vegetables and ham <i>Sommergrønnsaker med skinke</i> .....	0.51	1.01	10.2	0.33	0.66	5.5
	Turkey, tomato and rice <i>Kalkun med tomatis</i> .....	0.16	0.28	3.2	0.42	0.73	7.0

<sup>1</sup>) The percentage of the recommended daily allowances (Statens Ernæringsråd) when values are based on a serving size of 50 g at 3 months and 4–5 months age, and 100 g at 8 months age.

Table 3. The contents of niacin and pyridoxine in canned dinner products to infants of different age groups. The values are based on wet weights.

Age group	Sample	Niacin			Pyridoxine		
		mg/kg	mg/1 000 kcal	% of RDA <sup>1</sup>	mg/kg	mg/kg protein	% of RDA <sup>1</sup>
3 months	Veal and vegetables						
	<i>Kalv med grønnsaker</i> . . . . .	8.27	13.91	8.3	0.90	43.68	15.0
	Chicken in bouillon						
	<i>Kylling i kraft</i> . . . . .	5.17	7.01	5.2	0.22	6.98	3.7
	Lamb and vegetables						
	<i>Lam og grønnsaker</i> . . . . .	10.90	16.72	10.9	0.58	27.98	9.7
	Mixed vegetables						
	<i>Blandede grønnsaker</i> . . . . .	9.68	13.51	9.7	0.57	24.56	9.5
	Vegetables and lamb						
<i>Grønnsaker og lam</i> . . . . .	6.88	11.85	6.7	0.42	18.07	7.0	
Vegetables and liver							
<i>Grønnsaker og lever</i> . . . . .	7.26	15.93	7.3	0.51	27.36	8.5	
4–5 months	Veal and vegetables						
	<i>Kalv med grønnsaker</i> . . . . .	13.40	17.22	13.4	0.48	15.33	8.0
	Chicken, rice and vegetables						
	<i>Kylling med ris og grønnsaker</i> . . . . .	8.94	12.25	8.9	0.61	23.58	10.1
	Cod and carrot						
	<i>Torsk med gulrot</i> . . . . .	9.14	13.45	9.1	0.46	6.65	7.7
	Cod roe and vegetables						
	<i>Torskerogn med grønnsaker</i> . . . . .	9.07	12.82	9.1	0.75	15.62	12.5
	Fish, tomato and vegetables						
	<i>Fisk med tomater og grønnsaker</i> . . . . .	5.90	10.06	5.9	0.29	4.32	4.8
	Meat balls						
	<i>Kjøttboller</i> . . . . .	9.60	11.43	9.6	0.17	1.80	2.8
Mixed vegetables							
<i>Grønnsaksmiddag</i> . . . . .	8.30	15.83	8.3	0.54	31.72	9.0	
Turkey and vegetables							
<i>Kalkun med grønnsaker</i> . . . . .	12.60	19.19	12.6	0.54	14.83	9.0	



Age group	Sample	Niacin			Pyridoxine		
		mg/kg	mg/1 000 kcal	% of RDA <sup>1</sup>	mg/kg	mg/kg protein	% of RDA <sup>1</sup>
8 months	Vegetables and beef <i>Grønnsaker med oksekjøtt</i> .....	9.49	15.57	9.5	0.69	20.90	11.5
	Vegetables and liver <i>Grønnsaker med lever</i> .....	8.29	16.54	8.3	0.66	3.36	11.0
	Fish balls <i>Fiskeboller</i> .....	7.05	11.60	7.0	0.31	4.43	5.1
	Beef and vegetables <i>Oksekjøtt med grønnsaker</i> .....	9.85	17.57	12.3	0.16	5.80	2.6
	Veal and vegetables <i>Kalv med grønnsaker</i> .....	10.50	17.11	13.1	0.48	16.31	8.0
	Chicken and vegetables <i>Kylling med grønnsaker</i> .....	12.50	15.79	15.6	0.61	17.63	10.2
	Cod and vegetables <i>Torsk med grønnsaker</i> .....	4.87	6.62	6.1	0.36	9.28	6.0
	Ham and spaghetti <i>Skinke med spaghetti</i> .....	12.40	11.26	15.5	0.46	10.35	7.7
	Lamb and vegetables <i>Lam med grønnsaker</i> .....	9.20	16.45	11.5	0.10	3.85	1.6
	Liver, bacon and vegetables <i>Lever og bacon med grønnsaker</i> .....	15.70	18.90	19.6	0.57	18.32	9.5
	Liver and vegetables <i>Lever med grønnsaker</i> .....	16.80	25.47	21.0	0.52	15.34	8.7
	Roast venison and vegetables <i>Dyrestek med grønnsaker</i> .....	11.80	16.29	14.7	0.23	5.64	3.8
	Summer vegetables and ham <i>Sommergrønnsaker med skinke</i> .....	6.14	12.24	7.7	0.36	17.27	6.0
	Turkey, tomato and rice <i>Kalkun med tomatis</i> .....	10.00	17.44	12.5	0.52	14.84	8.7

<sup>1</sup>) Percentage of the recommended daily allowances (Statens ernæringsråd) when values are based on a serving size of 50 g at 3 months and 4–5 months age, and 100 g at 8 months age.

Table 4. The contents of pantothenic acid, B<sub>12</sub> and biotin in canned dinner products to infants of different age groups. The values are based on wet weights.

Age group	Sample	Pantothenic acid mg/kg	B <sub>12</sub> µg/kg	Biotin µg/kg	
3 months	Veal and vegetables <i>Kalv med grønnsaker</i> .....	1.63	0.70	14.50	
	Chicken in bouillon <i>Kylling i kraft</i> .....	2.11	1.60	6.90	
	Lamb and vegetables <i>Lam og grønnsaker</i> .....	1.94	0.60	14.50	
	Mixed vegetables <i>Blandede grønnsaker</i> .....	1.57	0.14	13.80	
	Vegetables and lamb <i>Grønnsaker og lam</i> .....	1.89	1.40	8.60	
	Vegetables and liver <i>Grønnsaker og lever</i> .....	2.33	20.00	46.00	
	4-5 months	Veal and vegetables <i>Kalv med grønnsaker</i> .....	1.30	0.90	8.50
		Chicken, rice and vegetables <i>Kylling med ris og grønnsaker</i> .....	2.17	0.12	14.40
Cod and carrot <i>Torsk med gulrot</i> .....		1.49	5.90	10.40	
Cod roe and vegetables <i>Torskerogn med grønnsaker</i> .....		4.90	16.00	45.00	
Fish, tomato and vegetables <i>Fisk med tomater og grønnsaker</i> .....		0.95	5.70	9.60	
Meat balls <i>Kjøttboller</i> .....		1.84	5.10	14.40	
Mixed vegetables <i>Grønnsaksmiddag</i> .....		1.56	0.15	19.80	
Turkey and vegetables <i>Kalkun med grønnsaker</i> .....		1.38	3.20	16.20	
Vegetables and beef <i>Grønnsaker med oksekjøtt</i> .....		1.35	1.40	11.00	
Vegetables and liver <i>Grønnsaker med lever</i> .....		1.50	23.90	48.00	
Fish balls <i>Fiskeboller</i> .....		0.98	5.90	13.10	
8 months		Beef and vegetables <i>Oksekjøtt med grønnsaker</i> .....	1.77	0.90	4.90
		Veal and vegetables <i>Kalv med grønnsaker</i> .....	1.70	1.90	12.50
		Chicken and vegetables <i>Kylling med grønnsaker</i> .....	2.49	1.70	12.50

Age group	Sample	Pantothenic acid mg/kg	B <sub>12</sub> µg/kg	Biotin µg/kg
	Cod and vegetables			
	<i>Torsk med grønnsaker</i> . . . . .	0.72	2.60	5.90
	Ham and spaghetti			
	<i>Skinke med spaghetti</i> . . . . .	1.61	1.40	22.20
	Lamb and vegetables			
	<i>Lam med grønnsaker</i> . . . . .	1.24	1.90	3.70
	Liver, bacon and vegetables			
	<i>Lever og bacon med grønnsaker</i> . . . . .	3.89	33.90	90.50
	Liver and vegetables			
	<i>Lever og grønnsaker</i> . . . . .	4.06	112.00	89.90
	Roast venison and vegetables			
	<i>Dyrestek med grønnsaker</i> . . . . .	—	4.40	—
	Summer vegetables and ham			
	<i>Sommergrønnsaker med skinke</i> . . . . .	0.58	0.70	9.30
	Turkey, tomato and rice			
	<i>Kalkun med tomatis</i> . . . . .	0.62	1.60	15.40

mg/kg wet weight with an average content of 1.83 mg/kg. Considerable variations were found for the contents of biotin and vitamin B<sub>12</sub>. The lowest level of vitamin B<sub>12</sub> (0.12 microg/g) was found in a product of «chicken, rice and vegetables», while the highest level was found in a product of «liver and vegetables» (112.0 microg/kg). Likewise, the levels of biotin varied from 3.70 microg/kg in «lamb and vegetables» to 90.50 microg/kg wet weight in «liver, bacon and vegetables». The recommendations from Statens Ernæringsråd (1981) do not include RDA-values of pantothenic acid, vitamin B<sub>12</sub> and biotin. However, the U.S. National Research Council (NRC), Food and Nutrition Board (1979) recommended RDA-values for vitamin B<sub>12</sub> of 0.5 microg resp. 1.5 microg to infants of 0–6 months and 6–12 months. Thus, assuming meal sizes of 50 g resp. 100 g, products to infants of 0–6 months age containing more than 10 microg/kg wet weight and to infants of 6 months or more containing more than 15 microg/kg wet weight should satisfy the daily requirement. Only the five products containing liver and cod roe fulfilled these requirements.

Five of the analysed products were based on fish. The concentrations of all B-vitamins in «cod roe and vegetables» were in the upper concentration range compared to the other products. The fish filet products were in the lower concentrations range for thiamine, riboflavine, niacin, pyridoxine, pantothenic acid and biotin. The fish products were generally good sources of vitamin B<sub>12</sub>, supplying 60 to 200 percent of the RDA-values recommended by NRC (1979).

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