Norwegian white wheat flour

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Background and aim: White wheat flour (78% extraction) contributes significantly to the total intake of several essential nutrients in the Norwegian diet. Hence, it is important to have reliable data on the nutritional composition of this food item. Norwegian wheat is mainly grown in the southern half of Norway. Each year imported wheat is added to the wheat grown in Norway to enhance the quality of the flour. The aim of the project was to obtain new representative data for the nutritional composition of white wheat flour on the Norwegian market.

Sampling and analysis: White wheat flour from the two main milling companies, representing five different mills, was included in the project. Flour was sampled for two consecutive years; 2003 and 2004. The number of collected primary samples was 58. The number of analytical samples included in the calculated weighted means ranged from 4-16 depending on the nutrient. The project report including details on sampling procedures and analytical methods is available at www.norwegianfoodcomp.no/publications

Quality control: After receiving the analytical data from the laboratory, the sum of macronutrients was calculated as a control of the reliability of the data. The analytical values were then compared with previous values in the Norwegian Food Composition Table and to nutrient values for white wheat flour in other countries' food composition tables to evaluate whether the results were within expected ranges. Divergent values were further controlled to see if errors could be identified somewhere in the process.

Calculation of weighted means: A weighted mean according to market shares was calculated for use in the food composition table. As the analytical results for water and starch for the 2004 flour were systematically lower and higher respectively than other comparable values, only the results from the 2003 crop were used when calculating weighted means for these nutrients.

Table 1: Nutritional composition of white wheat flour on the Norwegian market.

Nutrient	Unit	White wheat flour			
		MVT-91	MVT-95	MVT-06	Present project
Water	g	15	15	14	13
Protein	g	11.4	11.4	11.8	11.4
Fat	g	2.0	2.0	1.7	1.5
Carbohydrates	g	71.0	67.2	63.9	71.6
Starch	g	-	63.0	62.4	70.7
Fiber	g	3.1	2.9	3.6	3.4
Thiamin	mg	0.28	0.28	0.31	0.26
Folate	µg	-	13	18	18
Iron	mg	1.2	1.5	1.4	1.2
Zinc	mg	-	1.0	1.0	0.9
Selenium	µg	-	17	6	5
Magnesium	mg	-	34	39	34

MVT, Norwegian Food Composition Table

Results: The weighted means for selected nutrients are presented in Table 1 along with values for wheat flour in three previous editions of the Norwegian Food Composition Table. As can be seen from the table, the nutritional composition of the flour has remained quite stable. Some variation is likely to be seen because of differences in analytical methods and sampling procedures in addition to the natural variation in the nutritional composition of the flour. The nutritional composition of the flour will also vary according to the percentage of imported wheat that is added to the Norwegian wheat each year. During the period form 1991 to 2004, the percentage of Norwegian wheat varied between 34% and 75%.

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