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# **Nordic Nutrition Recommendations 2012**

Integrating nutrition and  
physical activity

5th edition

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### **Nordic co-operation**

*Nordic co-operation* is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland, and Åland.

*Nordic co-operation* has firm traditions in politics, the economy, and culture. It plays an important role in European and international collaboration, and aims at creating a strong Nordic community in a strong Europe.

*Nordic co-operation* seeks to safeguard Nordic and regional interests and principles in the global community. Common Nordic values help the region solidify its position as one of the world's most innovative and competitive.

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acid composition in the diet is stronger than for the total fat intake with respect to development of chronic diseases such as coronary heart disease, type-2 diabetes, and certain cancers. Also, the dietary sources of major fatty acid categories play an important role in the associations with health. The same applies to carbohydrates where the content and profile of the various dietary constituents determine the physiological and health effects. Frequent consumption of plant foods that are rich in dietary fibre, such as whole-grain cereals, is generally associated with health benefits, and frequent consumption of foods rich in refined grains and sifted flour and added sugars is associated with increased risk of chronic diseases. Scientific evidence also indicates that the health effects of fat intake can be modified by the amount and food sources of carbohydrates and fibre.

### **Vitamins and minerals**

NNR 2012 sets Recommended Intakes (RI) for most essential micronutrients. These RIs are based on different types of scientific evidence, and should, when consumed as part of a varied, well-balanced diet, assure optimal function and development and contribute to a reduced risk of major chronic diseases. RIs have traditionally been based on criteria for optimal development and maintenance of body functions. In recent decades, however, more emphasis has been put on criteria such as the influences on the risk factors for chronic disease and on the risk of chronic diseases. Thus recent national nutrition surveys and dietary patterns in the Nordic countries indicate that emphasis needs to be put partly on certain micronutrients (e.g., vitamin D, selenium, iodine, sodium, iron, and folate) and partly on the quality of carbohydrates and fats.

### **Dietary Reference Values for nutrient intakes intended for dietary planning**

NNR 2012 includes recommended intake ranges for macronutrients, upper or lower threshold levels for certain subcategories, and RIs of essential micronutrients. The macronutrient sub-categories are polyunsaturated, monounsaturated, saturated, and trans-fatty acids; protein; dietary fibre; and added, refined sugars. Recommendations are also given for alcohol consumption for adults.

## Recommended intakes of macronutrients (excluding energy from alcohol) Adults and children from 2 years of age



### Fatty acids (expressed as triglycerides)

Intake of cis-monounsaturated fatty acids should be 10–20% of the energy intake (E%).

Intake of cis-polyunsaturated fatty acids should be 5–10 E%, of which n-3 fatty acids should provide at least 1 E%.

Cis-monounsaturated and cis-polyunsaturated fatty acids should constitute at least two thirds of the total fatty acids in the diet.

Intake of saturated fatty acids should be limited to less than 10 E%.

Intake of trans-fatty acids should be kept as low as possible.

The total fat recommendation is 25–40 E% and is based on the recommended ranges for different fatty acid categories.

Linoleic (n-6) and alpha linolenic (n-3) acids are essential fatty acids and should contribute at least 3 E%, including at least 0.5 E% as alpha linolenic acid. For pregnant and lactating women, the essential fatty acids should contribute at least 5 E%, including 1 E% from n-3 fatty acids of which 200 mg/d should be docosahexaenoic acid, DHA (22:6 n-3).

Partly replacing saturated fatty acids with cis-polyunsaturated fatty acids and cis-monounsaturated fatty acids (oleic acid) from vegetable dietary sources (e.g., olive or rapeseed oils) is an effective way of lowering the serum LDL-cholesterol concentration. Replacement of saturated or trans-fatty acids with cis-polyunsaturated or cis-monounsaturated fatty acids decreases the LDL/HDL-cholesterol ratio. Replacing saturated and trans-fatty acids with cis-polyunsaturated fatty acids reduces the risk, for example, of coronary heart disease, and replacement of saturated and trans-fatty acids with cis-monounsaturated fatty acids from vegetable dietary sources (e.g., olive or rapeseed oils) has similar effects.

Even though total fat intake varies widely, population and intervention studies indicate that the risk of atherosclerosis can remain quite low as long as the balance between unsaturated and saturated fatty acids is favourable. In addition to the quality of fat, it is important to pay attention to the quality of carbohydrates and the amount of dietary fibre, that is, the recommendations for dietary fibre and carbohydrates (with low intakes of

added sugar) should be achieved through an ample supply of plant-based foods. The recommended range for the total amount of fat is 25-40 E% based on the sum of the ranges of the recommendations for individual fatty acid categories.

For the intake of total fat, a suitable target for dietary planning is 32-33 E%.

At total fat intakes below 20 E%, it is difficult to ensure sufficient intake of fat-soluble vitamins and essential fatty acids. A reduction of total fat intake below 25 E% is not generally recommended because very low-fat diets tend to reduce HDL-cholesterol and increase triglyceride concentrations in serum and to impair glucose tolerance, particularly in susceptible individuals.

#### Carbohydrates and dietary fibre

Health effects of dietary carbohydrates are related to the type of carbohydrate and the food source. Carbohydrates found in whole-grain cereals, whole fruit, vegetables, pulses, and nuts and seeds are recommended as the major sources of carbohydrates. Total carbohydrate intakes in studies on dietary patterns associated with reduced risk of chronic diseases are in the range of 45-60 E%. A reasonable range of total carbohydrate intake is, however, dependent on several factors such as the quality of the dietary sources of carbohydrates and the amount and quality of fatty acids in the diet.

#### Dietary fibre

Adults: Intake of dietary fibre should be at least 25-35 g/d, or approximately 3 g/MJ.

Children: An intake corresponding to 2-3 g/MJ is appropriate for children from 2 years of age. From school age, the intake should gradually increase to reach the recommended adult level during adolescence.

An adequate intake of dietary fibre reduces the risk of constipation and contributes to a reduced risk of colorectal cancer and several other chronic diseases such as cardiovascular disease and type-2 diabetes. Moreover, fibre-rich foods help in maintaining a healthy body weight. Intake of appropriate amounts of dietary fibre from a variety of foods is also important for children.