Foodweb, a tool of food choice to fill the gap from awareness to real impact

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Objectives

The major future challenge regarding dietary change is to increase nutritional quality and reduce environmental impact and toxic exposure of food. The first two challenges largely relate to increase in the intake of fruit, vegetables and whole grain cereals, and decrease in the consumption of meat products. Three scenarios were analysed to study the balance of nutritional value, environmental impact and toxic exposure. All meals were harmonised for energy to meet one third of the daily energy requirement of an average 35 year old woman with a bodyweight of 63 kg and a medium level of activity.

Methods

Scenario 1. The carbon footprints of the meals will be lessened by reducing the amount of animal protein raw materials and by increasing the amount of vegetables, carbohydrates and fish. The amounts of other raw materials will remain the same.

Scenario 2: The nutritional value of meals will be increased by reducing the amount of saturated fats, salt and sugar-containing raw materials. The amount of other raw materials will be increased to balance the energy content of meals.

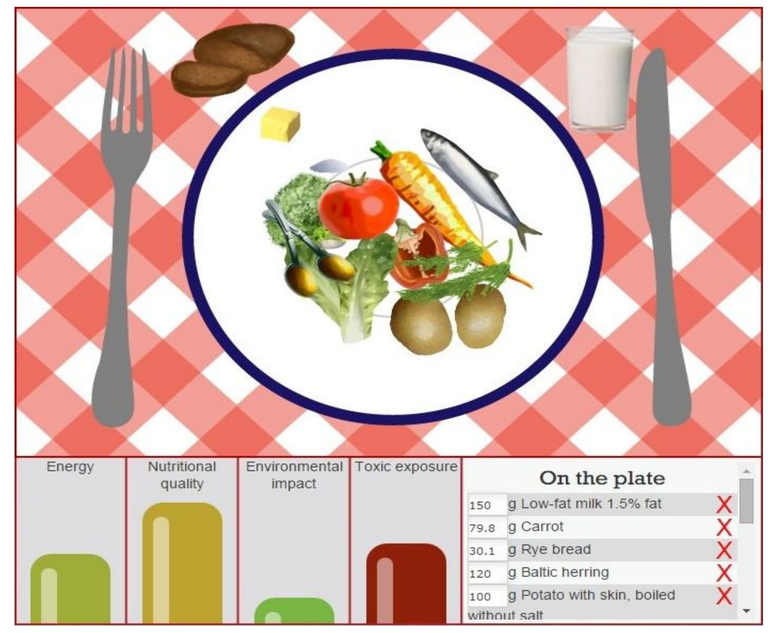
Results

According to the "Foodplate" model, changing the raw materials slightly can make a significant difference to nutritional and environmental quality of a meal (Figure 1 and 2).

There are many possibilities to choose healthy and environmentally friendly raw materials for the plate. As an example, replacing processed and red meat with vegetarian alternatives (such as pulses), fish, or poultry, increases the nutritional value and reduces the environmental impact markedly.

Increasing the nutritional value and decreasing the environmental impact can be done by changing recipes. It is possible to increase the nutritional value of meals by reducing the use of sugars, salt (sodium) and saturated fat, in ready-made meals known as 'hidden ingredients'.

The intake of toxic compounds can be reduced by eating a wide variety of foods and avoiding consumption of any one raw material in large quantities. Simultaneously, the nutritional value may increase and the environmental impact of meal decrease.



Picture. The environmental impact, contaminant exposure and nutritional quality of different food plates were examined using the “Foodplate” web application (http://foodweb.ut.ee/foodplate/).

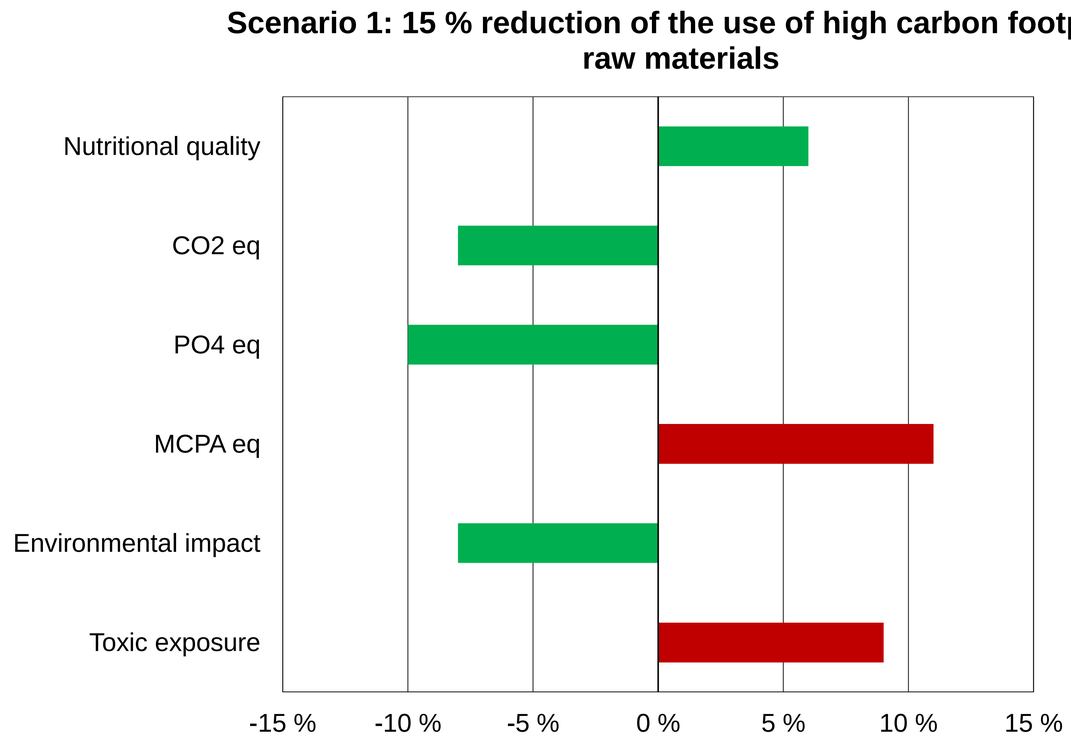


Figure 1. A 15 % shift from the energy of animal protein raw materials to carbohydrate and vegetable raw materials would increase the nutritional value by about 6 % and reduce the weighted overall impact (environmental impact) indicator by about 8 %. The 15 % decrease in raw materials did not change the composition of the whole meal significantly.

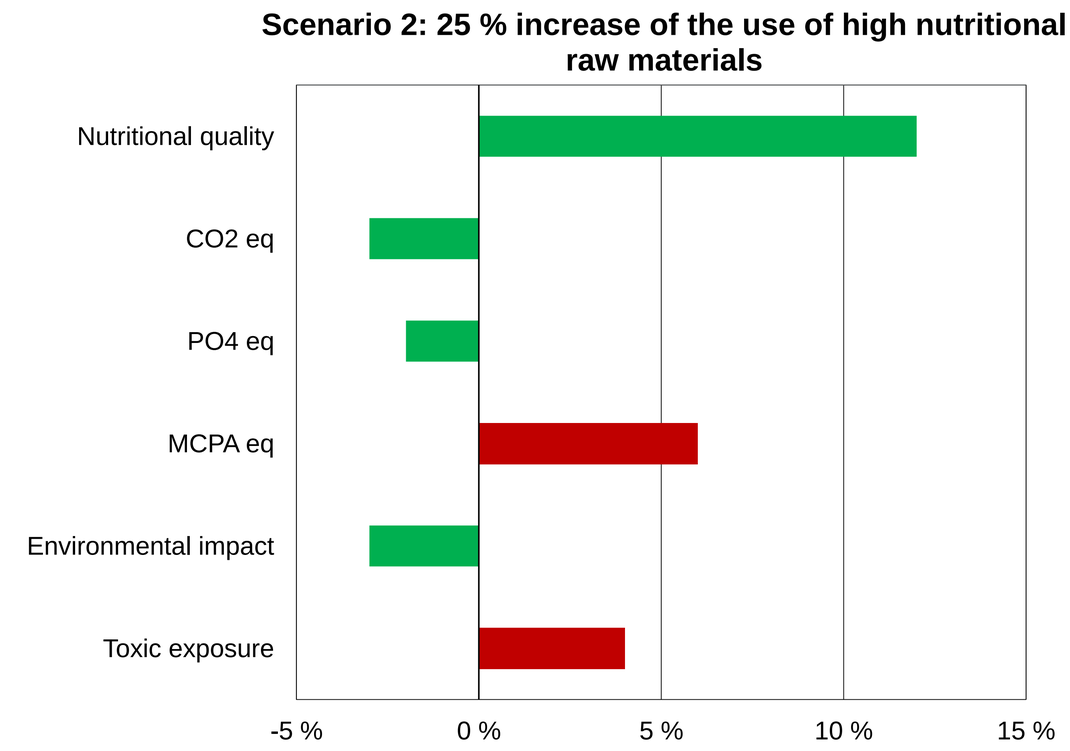


Figure 2. A 25 % shift from the energy of saturated fats, salt and sugar-containing raw materials to other raw materials, such as protein, fibre-rich carbohydrate and vegetable, would, accordingly, increase the nutritional value by 12 %, reduce the climate change impact indicator (CO2 eq) by about 3 %, the eutrophication impact indicator (PO4 eq) by about 2 %, and the weighted overall impact indicator by about 3 %. The ecotoxicity impact indicator would increase by about 4 %.