

# Pills and fortified foods: **pseudo-solutions in a more sustainable diet**

*In most Western countries, eating more sustainably means a diet with more plant-based and fewer animal-based products. But this compromises the intake of certain nutrients. Does the solution lie in food supplements and fortified foods? Or is the reality more complicated, and this solution insufficient?*

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In formulating dietary guidelines in the Netherlands, the policy is to endeavor to get all nutrients through food (see box on the Netherlands Nutrition Centre). Supplements are only recommended if this is actually not feasible through food. Therefore, in the Netherlands, such recommendations are exceptions to the rule. There are a few official food supplement recommendations in the Netherlands. These concern folic acid for women who want to become pregnant or are pregnant, vitamin D supplements for specific age groups and people with darker skin tones, and vitamin B12 supplements for vegans.

### Protein transition

Making our food system more sustainable by promoting more plant-based products has led to nutrient supply becoming an important issue. In developing the National Climate Agreement, the Dutch government has set the goal of a protein transition from the (current) consumption of 60% animal and 40% plant protein to 40% animal and 60% plant protein. In a recent report, the Netherlands Nutrition Centre (Voedingscentrum) and the National Institute for Public Health and Environment (RIVM) calculated the protein ratio if you eat according to the Wheel of Five. The ratio of plant to animal protein in the Wheel of Five is about 50/50. When determining

## Wheel of Five, Netherlands Nutrition Centre

The Dutch food-based dietary guidelines are based on a two-step process. The scientific part is carried out by The Health Council of the Netherlands. The Health Council has established the Dutch food-based dietary guidelines in 2015, based on the health effects of whole foods on non-communicable diseases. In addition, the Health Council has set the nutrition standards to indicate how many nutrients people need for physiological processes to run normally and for staying healthy. The second step is carried out by The Netherlands Nutrition Centre that is responsible for translating the Health Council's scientific advice into daily practical guidelines for consumers. In doing so, we integrate the health effects of foods with nutrition standards. To meet the need (i.e. norms) for energy and nutrients, we mainly advise eating foods with a positive health effect or nutrient-rich foods. The Dutch food-based dietary guidelines are called The Wheel of Five: "We recommend supplements only if the nutrient recommendations cannot be met through a healthy diet. Within the framework of a healthy diet, we have included sustainability aspects. We have introduced restrictions in the optimization process for products with high greenhouse gas emissions, and offer actionable options through our website."

### Tackling deficiencies

Generally speaking, in the West, it is healthier and more sustainable to eat more plant-based foods. Any far-reaching transition, however, puts the intake of specific nutrients in question. It can be tempting to fill the gap with food supplements and fortified products. To know whether supplements and fortification

are the solution in preventing nutrient deficiencies, it is necessary to examine what this looks like in practice. Compliance (i.e. adherence) to nutritional advice is an important factor to consider when implementing food supplement recommendations or advising fortified products in a more plant-based diet.

### Folic acid

important to know the extent to which population groups will adhere to the advice. To do this, we can take a close look at the groups that currently receive food supplement recommendations. The group where the highest compliance to food supplement recommendations can be expected is women who want to become pregnant or who are pregnant. They are advised to take a dietary supplement of 400 micrograms of folic acid per day. Adherence (i.e. compliance) among this group is high, thanks to individual counseling from midwifery practices during this period. 55% use folic acid as directed, 34% do not use it as directed, and only 1.5% do not use folic acid supplements. Among the group that does not use it as directed, the main reasons are starting too late and stopping too early. This is particularly true among young women who are undereducated, women born abroad, or women who are becoming pregnant for the first time<sup>2</sup>.

## In the Wheel of Five, the ratio of plant to animal protein is about 50/50

the Wheel of Five, the Nutrition Centre makes meticulous trade-offs so as not to compromise nutrient intake. In light of this, the Netherlands Nutrition Centre and the Health Council of the Netherlands indicate that eating according to a ratio of 40/60 animal/plant protein is possible by decreasing or deleting meat intake provided it is done with sufficient attention to the nutrients. It is not clear whether this ratio is feasible for vulnerable groups, such as the elderly and young children<sup>1</sup>. More insight is therefore needed.

### Adhering to supplement advice

When policymakers consider food supplement recommendations, it is

### Vitamin B12

Another health-conscious group subject to a food supplement recommendation are vegans who should take vitamin B12

Food supplements and fortified foods



supplements. Compliance levels among this group are not available in the Netherlands but have been studied in Australia. That study shows that about 90% of Australian vegans take a vitamin B12 supplement<sup>3</sup>.

**Vitamin D**

One food supplement recommendation that has been in place in the Netherlands for decades is vitamin D. This recommendation applies to various population

vitamin D for the elderly, which has been in place for decades, it appears that only a quarter to a third of the population can adhere to the recommendation. Consumer compliance to food supplement recommendations depends on many factors, including personal motivation, effective communication, and implementing such advice as directed. Only when intrinsic motivation is high, such as in the case of an (upcoming) pregnancy, is compliance

type 2 diabetes and colorectal cancer. The protective effect of dairy on colorectal cancer is also observed when people take calcium supplements. According to the guidelines, there is no evidence that dairy intake is associated with an increase in cardiovascular disease, despite the fact that dairy products contain saturated fat and, in the case of cheese, salt. Intake of calcium in supplement form, however, is associated with a 30% increase in the risk of coronary heart disease<sup>4</sup>. Hence, one cannot necessarily assume that nutrients from food supplements have the same health effects as those within the food matrix.

**Fortified foods**

What does the offering of fortified foods look like in practice? Several plant-based products can be found in the supermarket that advertise themselves as an "alternative" to an animal product. Many of these products resemble animal products on the surface, but not in their composition. This assortment is getting wider. For example, there are currently several plant-based drinks on the market that offer themselves as alternatives to milk. The base of these drinks is often soy, pea, oat, almond, coconut, or rice.

**Guidelines for alternatives**

The Netherlands Nutrition Centre has published nutritional guidelines for the composition of products that position themselves as alternatives to animal products. For example, there are

**Supplement compliance: high among health-conscious people, low among the general population**

groups, such as women over 50 and men over 70. The Dutch Food Consumption Survey (VCP 2019-2021) shows that only 37% of women and 25% of men adhere to this advice. These percentages have not changed since the 2013 Food Consumption Survey.

**Compliance**

It can be concluded that food supplement compliance is high among health-conscious people, such as folic acid among women who want to become pregnant and vitamin B12 among vegans. Compliance to general supplement advice is low. In the case of

high. In addition, it is important to realize that the group of Dutch people who currently do not use dietary supplements is 43%. They are not accustomed to using supplements.

**Food supplements and health**

Because of the food matrix, nutrients in the form of supplements can have a different health effect than those found in food. The Health Council's food-based dietary guidelines (the "RGV") provide several examples of this. For example, the RGV concludes that dairy intake has a protective effect on the risk of

guidelines for plant-based drinks so that people who do not want to or cannot drink milk have a complete alternative. Plant-based drinks as an alternative to milk must contain at least 20% protein and at least 0.24 micrograms of vitamin B12 and 80 mg of calcium. There are also limits of 1.1 grams of saturated fat, 6 grams of sugar, and 0.15 grams of salt per 100 ml. It is well-known that the protein quality of plant-based drinks is inferior to that of milk, except in the case of soy.

### Product offering

In recommending fortified products, it is important to know what percentage of plant-based products meet the Nutrition Centre's criteria. Organic plant-based beverages are not permitted to be fortified and do not meet the guidelines<sup>5</sup>.

Of all plant-based drinks, 50% appear to be fortified with calcium, and some are also fortified with vitamins. This means that a small minority of plant-based drinks meets the Nutrition Centre's criteria. Some fortified soy drinks are the only product that is an alternative to milk, according to the Netherlands Nutrition Centre. The market for plant-based drinks has expanded considerably in recent years. Soy drinks have faced a lot of competition from other plant-based drinks, especially oat drinks. Oat drinks are nutritionally inferior to fortified soy drinks. Health recommendations around fortified products must take into account that consumers often do not choose the "desirable or healthy" alternatives.

### Veggie burgers

Plant products that position themselves as alternatives to meat and cheese are also subject to the Nutrition Centre's criteria. Most products in the supermarket do not meet these criteria. Recent research by the Dutch consumers' association The Consumentenbond into veggie burgers – where minced meat is replaced by, for example, beans, nuts, tofu, or mushrooms – shows that two-thirds are not healthy. Veggie burgers contain too much salt and saturated fat. The same research shows that in the assortment at supermarkets, a small number of veggie burgers contain sufficient protein, iron, and vitamin B12<sup>6</sup>.

## Summary

For a more plant-based diet, fortified plant products and food supplements can be considered in tackling deficiencies. It is difficult to predict what consumers will eat and drink. Taste and price remain the

# Organic plant-based drinks are not allowed to be fortified

main drivers. In practice, food supplements and fortification are shown to be insufficient solutions. The reasons are that food supplement recommendations for the general public are not well followed, that replacing animal products with plant products does not entail a 1-to-1 nutrient balance, and that consumers do not necessarily make the switch to these products. For example, even if consumers replace milk with fortified plant-based beverages that meet the criteria, this does not mean a 1-to-1 replacement of the nutrients from milk. Research shows that the availability

of vitamins A and B12, thiamine, zinc, calcium iron, and iodine, among others, becomes problematic<sup>7,8</sup>. The assumption that replacing animal products with supplements and fortified plant products can form an equally healthy diet, is not correct. Not even if animal products are replaced in the manner recommended by the Netherlands Nutrition Centre.

## Conclusion

For Western countries, it is healthier and more sustainable to eat more plant-based foods than in the current average diet. Fortification and supplements do not appear to be solutions to deficiencies that may arise in the process. A diet that does not provide all nutrients is not healthy and is therefore not sustainable. In the Netherlands, it has always been the policy to provide all the nutrients people need through food, unless there is no other way. The Wheel of Five is a good example of this. Health always comes first here. Adhering to the Dutch Health Council and the Netherlands Nutrition Centre's requirements for healthy food is essential. The Wheel of Five meets the food-based dietary guidelines from the Health Council and all the nutritional requirements for vitamins, minerals, and trace elements that we need. If the Dutch population adheres to this, then their diets will be healthy and more sustainable. <

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