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info@face-network.eu
www.face-network.eu

Position Paper on
Front of Pack Nutrition Labelling
Scientific review on
Nutrient Profiling

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Drafted with Prof. Dr Ton Baars, Senior scientist at Utrecht University, Dpt Immunopharmacology

Section 1 - FACEnetwork's position on Front of Pack Nutrition labelling on traditional dairy products

FACEnetwork (Farmhouse and Artisan Cheese and dairy producers' European network) represents traditional cheese makers from 20 different European countries. These farmers and artisans process milk from their own livestock or from local farms, according to traditional methods. The milk can come from cows, sheep or goats and most of our members are family enterprises manufacturing locally-recognised products. Our sector is very much in line with the concept of sustainable food systems currently highlighted by the European Commission through the Green Deal and the Farm to Fork strategy.
However, a mandatory Front of Pack nutritional labelling would have a massive negative impact on farmhouse and artisanal cheese dairies. Indeed, because we don't standardise the milk used for our products, we can't guaranty stable nutritional composition during the year and we are not able to give sincere nutritional values.

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The fact that we are mainly using whole milk makes that some of our products, like mature cheeses, would be very bad scored according to current nutrient profiling criteria, while some industrial fresh products with fat added will appear with better values. The dairy industry is already launching highly skimmed products with consistency enhancing ingredients such as inulin. Traditional farm cheese dairies will not follow this approach... Thus, will it be fair that our artisan unprocessed products get a red Nutri Score label for avoiding the use of additives?

According to us, the single-nutrient approach used in nutrient profiling can lead to wrong information. For example, while milk products get bad values because of their high amount of saturated fat, it appears that more and more real-life studies show an inverse relationship between total dairy consumption and obesity in children and adolescents. Some studies also show that there is a neutral or even positive effect of dairy fat consumption and the risk of cardiovascular disease. It becomes obvious that a moderate consumption of milk products could be part of a healthy lifestyle. But nutrient profiling doesn't reflect that.
In addition, our experience, as producers very close to consumers through short supply chains, show us that very often, consumers do not base their purchasing decision of traditional products according to their nutrition declaration, but on the conviction of buying unique and different food. On this point also, there is a very big difference between traditional products and ultra-processed foods.

For all these reasons, we ask for a derogation: farmhouse and artisan cheese and dairy products, as well as for all traditional products, should be exempt from using any Front of Pack nutrition labelling system. This would be in line with the current FIC regulation which provides a derogation to nutritional labelling for "small quantities of products [sold] to the final consumer or to local retail establishments directly supplying the final consumer" (Regulation (EU) Nr. 1169/2011 – annex v – point 19).

Section 2 - Scientific review and Position on Nutrient Profiling regarding traditional dairy products

Introduction

Regarding the general nutrient profiling system, FACEnetwork is in favor of another approach, taken into account the whole food and even the whole diet, instead of the single nutrients separately.

The concern of FACE towards the introduction of nutrient profiling of food is according to the following topics:

- The lack of differentiation between the types of processed foods, given that ultra-processed industrial foods can't be compared to traditional fermented foods.
- The lack of understanding of the nutrients within a food matrix and their origin, especially the milk fatty acids.
- The choice for poor health indicators based on reductionistic research outcomes to improve the health of the population and the risk of repeating the same mistakes as in the 1950s.

Here, we will describe our view in detail, and support our standpoints by the latest scientific literature.

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Background

Milk and fermented milk products are important food choices within the European population. Several genetic mutations over the past 8.000-10.000 years have adapted Caucasian people to the digestion of milk lactose after weaning (Segurel et al., 2020). Especially near the Atlantic coast and coasts of the North Sea, milk consumption became an important part of the human diet. Other areas, where grazing dairy cows were important, were in the European mountainous areas. The surplus of rain offers the possibility to grow grass (Baars et al., 2019). Most milk has been consumed as fermented milk, as drinkable milk products like yoghurt and kefir and as a wide range of cheeses. Conservation of milk offered people the opportunity to consume milk products outside the production season of ruminants. Grazing animals produced milk and meat from grass, that could not be consumed by humans directly (Timlin et al., 2021). The protein quality of milk and meat is high compared to plant proteins.
The most consumed milk products are fresh milk, drinkable processed milk (yoghurt, kefir), fresh lactic acid cheese (quarck, white and blue mold cheese), semi-hard rind cheese (cheddar, gouda), and hard rind cheese (comte, emmental, parmesan). Milk fat is turned into butter. A wide range of traditional milk products is still based on raw, unprocessed, whole milk.

Concerns about the lack of differentiation between processed milk versus ultra-processed food and composed industrial foods

Farmhouse cheese makers still process the milk of cows, goats, and sheep in a traditional way to dairy products. Recipes of processing are maintained over decades and centuries and based on tradition and experience. The two main ingredients in milk processing are *lactic acid fermentation* and/or *renneting of milk* by natural enzymes. Bacteria and yeasts are two important living ingredients to ferment the milk. This way of traditional processing is completely different from the food-construction made by the modern food industries (Pollan, 2015). Fermented dairy therefor cannot be put together with processed industrial foods. Industrial processing is based on the input of science and profit maximation. The focus of industrial processing is composed foods based on the cheapest ingredients, where a large list of added products and ingredients with unclear names and backgrounds are used.
Processing of milk is a traditional, low-tech process in contrast to the ultra-processing in modern composed foods. Many observational studies connected the negative outcomes to health from ultra-processed foods (UPF), (Capozzi et al., 2021). An important negative impact comes from the glycation of proteins after (repeated and ultra-high) processing temperatures (Pinto et al., 2014; Zhao et al., 2017), which are not used in the traditional farmhouse milk processing. Besides pasteurization, the temperature of milk during cheese making does not exceed the level of 37°C (mesophilic cheeses) or 50°C (thermophilic cheeses). The higher intake of UPFs is found in connection with obesity, poor cardiometabolic risk factor profiles, and increased risk for non-communicable diseases (Capozzi et al., 2021).

Concerns about the lack of differentiation of fat and fatty acids

The general health concerns about the consumption of milk products are based on the high amounts of saturated fat in milk. Further milk fat is a source of trans fatty acids, due to the rumination activity of the farm animals. These concerns about the potential negative health impact of milk products arise from a reductionistic approach of food and health in general, and the definition of derived health markers. However, results from such approach can conflict with real-life studies (Fardet et al., 2021), and Lawrence (2021) calls *"it a persistent misconception that dietary saturated fats can cause or promote numerous adverse health effects and increase serum total cholesterol and LDL cholesterol".* Real-life studies integrate often

unknown aspects of the food matrix, and a recent systematic review study (Babio et al., 2021) showed an inverse relationship between total dairy consumption and obesity in children and adolescents. In a prospective study in children, Vanderhout et al. (2021) could calculate that "each 1% increase in cow's milk fat consumed by children was associated with a 0.05 lower zBMI score". Similar results were found in post-menopausal women, showing a dose-dependent negative impact of sour milk or cheese consumption for the risk of cardiovascular death and osteoporosis, however, a positive outcome of increased fresh milk consumption (Michaelsson et al., 2014).

These results make clear, how important it is to differentiate between milk products, but also between the origin of the fats consumed. Industrial trans fats (itFA) are different from ruminant trans fats (rtFA), both in their molecular structure and in their health impacts (Kuhnt et al. 2016). The trans-fat elaidic acid (C18:1t9) has its origin in industrial processing of oleic acid (C18:1c9), whereas trans vaccenic acid (C18:1t11) has its origin in the rumen degradation of C18:3 (alpha linoleic acid, n3). The negative, harmful impact of trans fats is mainly based on the itFA (Pfeuffer and Jahreis, 2018; Valenzuela et al., 2019; Pipoyan et al., 2021). The industrial tFA increase inflammatory markers in serum and built a risk factor in CVD (Valenzuela et al., 2019), but also in the risk of atopic eczema in young children (Chisaguano et al., 2014).

Milk fat is also the source of fat-soluble vitamins, like vitamin A, D and K2, especially in fermented whole milk products. Due to the grazing policy of small artisanal cheese producers, the milk from grass-based animals contains health-promoting phytonutrients, like terpenoids, phenols and carotenoids known for their anti-inflammatory and cardioprotective effects (Van Vliet et al., 2021), besides the better n6/n3 ratio and higher n3 and conjugated linolic acid (CLAc9t11) levels (Kusche et al., 2013, Benbrook et al., 2018). Another part of the dairy fat are the so-called branched-chain fatty acids (Taormina et al., 2020), that built a protection against inflammation, cancers and metabolic disorders, and which are also higher in grass-based milk (Kusche et al., 2013). Overall, the composition and functional properties from milk from grazing animals is different (Magan et al., 2021) than from animals in confined systems. It is questionable, if the amount of saturated fats from milk products really builds a problem, and if other markers, like the fat-soluble vitamins might be better and more positive markers for improved health. For instance, the amount of vitamin K2 in, especially fermented dairy products based on mesophilic cultures (Yasin et al., 2016, Fu et al., 2017, Vermeer et al., 2018, Akbulut et al., 2020), can build an explanation for the positive health outcomes of fermented dairy. K2 might play a crucial role in the right deposition of Calcium in the bones rather than in arterial vessels (Spronk et al., 2004; Buchanan et al., 2016).

Therefor Sendra (2020) stated, that there is a neutral or even positive effect of dairy fat consumption and the risk of cardiovascular disease. In combination with fermented dairy, a moderate consumption of milk products could be part of a healthy lifestyle. This is also concluded by O'Sullivan et al. (2020), who could not identify any negative impact of whole-fat dairy consumption in comparison to reduced-fat dairy in adults and in children on the weight gain or adiposity or cardiometabolic risk. This was confirmed in a study in children (Nicoll et al., 2021), and the change from whole-fat dairy to low-fat dairy did not change the outcomes. Monnard and Dulloo (2021) suggest that there is growing evidence that the intake of plant-based essential PUFAs, ALA-n3 and LA-n6, impact the body composition (the fat mass and the lean mass ratio). These are the main PUFAs in milk fat. Further, in Dutch pre-school children the intake of dairy products, full-fat dairy and butter reduced the incidence of asthma, not margarine or skimmed milk (Wijga et al., 2003).

Concerns about the poor health markers from reductionistic research

The high status of reductionistic research too often leads to a shortcut between outcome and health of food advice. It even might shred the general health of the population, since these shortcuts are transformed in diet advice, for instance to reduce the saturated fat intake, or to

get rid of animal fats. Dietary guidelines nowadays recommend minimizing the consumption of whole-fat dairy products. To evaluate the health risk of food consumption, several derived markers/ indicators became important, among others the BMI (Body Mass Index) or the cholesterol levels in blood. However, the most important health evaluation should be based on the death-outcomes of epidemiological, pre-clinical and clinical studies rather than the cholesterol levels (Lawrence, 2021). The BMI does not indicate the problems caused by the underlying problem of metabolic syndrome and non-alcoholic fatty liver disease (NAFLD), (Lustig, 2020), which exists both in fat and lean people, and the replacement of saturated fats with refined carbohydrates and sugar and/or poly-unsaturated fats did not improve the obesity status of the general population. Wu et al., (2021) found a direct link between the consumption of sugar sweetened beverages and high-fructose corn syrup beverages and cardiometabolic abnormalities in young adolescents. A theme which might be overlooked is the satiety level of a food based on the fat consumption in comparison to carbohydrate consumption. Therfore, Vien et al. (20210 concluded that “dairy products consumed before a meal stimulate metabolic responses leading to reduced premeal appetite, later food intake, and postmeal glycemia”. In the correlation between NAFLD, the intake of full-fat dairy products was protective for NAFLD and insulin resistance (Charatcharoenwitthaya et al., 2021). So-called low-grade systemic inflammation is found to be related to increased obesity, the rise of non-communicable diseases and the risk of chronic disease (Nieman et al., 2020; Hess et al., 2021), and in the evaluation of inflammatory markers, the consumption of dairy products showed a neutral till beneficial effect on the biomarkers for inflammation, especially from fermented dairy products (Hess et al., 2021). Calder (2020) mentioned inflammation as part of a normal immune response, which should be self-limiting. The anti-inflammatory response is challenged by very long-chain n3 PUFAs, EPA and DHA, which are important in prevention and treatment of inflammation lead diseases.

Overall, the consumption of milk and milk products showed neutral, or even positive effects to the health of people. Especially the fermented dairy, like cheese and yoghurt, impact health outcomes in a positive way. The risk of death decreased, cardiovascular disease decreased, but also the osteoporosis risk. Negative correlations also are mentioned in relation to several types of cancer, although one exception is present, the prostate cancer in men. In a large prospective study, the dairy consumption was evaluated in relation to overall mortality and cardiovascular death (Dehghan et al., 2018), and it was concluded, that “dairy consumption was associated with lower risk of mortality and major cardiovascular disease events”.
Mita et al. (2021) showed in a prospective longitudinal study in Japanese Type-2 diabetes patients, that a higher intake of saturated fatty acids, especially from milk products was associated with reduced arterial stiffness. These results were also found in a Brazilian population (Ribeiro et al., 2018). A meta-analysis came to a similar conclusion (Diez-Fernández et al., 2019). Ghosh et al. (2021) showed that the progression of coronary calcification as a predictor of cardiovascular disease mortality was inversely associated with whole fat milk consumption, and the beneficial effect were partly mediated by the consumption of saturated fat in milk.

Do not repeat the same mistakes as in the 1950s

In the late 1950s adult males in the US showed increased risk of heart failure and died from cardiovascular death. A conflict arose about the cause of the problems, in terms of the sugar- or the fat-consumption. Based on the insights of nutritionist Ancel Keys, the connection was made with the consumption of animal fats, as lard and butter. In short, you became fat from fat consumption. This mistake was based on poor science and political pressure from the industry. Over a 50 year-period the Western food system promoted low-fat, low-saturated fat diets, based on a reduced intake of animal fats and increased the intake of plant-based fats. In processed foods, fats were partly replaced by all kind of sugars. However, obesity and death by CVD even increased. What was overlooked, was the large increase in carbohydrate

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info@face-network.eu
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consumption, in the form of sugars and highly refined carbohydrates (Lawrence, 2021), leading to increased levels of low-grade inflammation, problems of non-alcoholic fatty liver syndrome (in both lean and obese people) and increased problems of metabolic syndrome due to added sugar and ultra-processed food consumption (Lustig, 2020). In a large prospective study, the relationship between the intake of macronutrients and cardiovascular disease and death showed that the higher intake of carbohydrates increased the CVD mortality risk, and the intake of total fat plus each type of fat decreased the mortality risk. The higher intake of saturated fat was associated with a reduced risk of stroke (Dehghan et al., 2017). In a prospective study in post-menopausal women the direct consequences of the dietary guidelines in terms of a low-fat high carbohydrate diet showed detrimental effects on cardiovascular health and insulin resistance in relation to type-2 diabetes. Overall, the blood low-density lipoprotein-cholesterol concentration was a poor predictor of the outcomes (Noakes, 2021).

Conclusion

In accordance with Fardet and Rock (2020), FACEnetwork has doubts, if the reductionistic approach in food science which is part of the food labelling approach, will be helpful to judge about the relation between real food consumption and health. A complementary, holistic approach is needed to discuss the relationship between diet and food items to prevent the epidemic of chronic disease and low-grade inflammation in western populations. **A shift is needed from a single-nutrient approach to a whole food and/or dietary approach to prevent false conclusions about the relationship between nutrients and health.** Especially the role of dairy products and dairy fats in the relationship health/disease and diet should be reexamined (Hirahatake et al., 2020).

Recently, Weaver (2021) made an appeal in her editorial, to have a **better focus on the role of the dairy matrix to understand the contradictive outcomes between real life studies and dietary food guidelines. FACEnetwork supports this point of view, and plies for a re-evaluation of the food labeling based on nutrients, and the sum of nutrients.**