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Name: Helen Bishop MacDonald, M.Sc., R.D., F.D.C., Director, Nutrition

Submitter: Dairy Farmers of Canada

Address: 1000-1801 McGill College

City: Montreal

Postal_Code: H3A 2N4

State: Quebec

Country: Canada

Email: helen@dfc-plc.ca

Fax: 1-514-284-1092

Tel: 1-514-284-0449

Scope_of_Activities: National and international

Mandate_of_the_Organization: Dairy Farmers of Canada (DFC) is the national non-profit organization funded by its 19,500 dairy producer members. Its mandate is to promote the consumption of dairy products for the health benefit of the population and the financial benefit of the dairy producers.

- The Policy and Government Relations Department ensures that the interests of the Canadian dairy industry are taken into consideration on all issues affecting the Canadian dairy industry, such as supply management and dairy production research.
- The Trade Department monitors trade-related issues such as WTO negotiations that could impact the Canadian dairy industry.
- The Marketing Department is responsible for the generic promotion and marketing of Canadian dairy products made from industrial milk such as cheese and butter. Fluid milk, which is sold as a beverage, is marketed by regional organizations across Canada.
- The Economics and Market Research Department is responsible for the development and evaluation of marketing and nutrition programs and the coordination of management information systems and the website for all departments.

Interest:

- The goals of the Nutrition Department are to communicate the nutritional value of dairy products and the health benefits associated with their consumption, to inform health professionals and consumers of the latest research finding favourable to dairy products and to rectify any misconceptions or misinformation about their role in a healthy diet.
- DFC is interested in the role of dairy products in health and disease. All nutrition communication programs to either the health professional or the consumer are supported by scientific research. DFC's nutrition database is up-dated on a regular basis with the latest scientific information, contains more than 18,000 references, in addition to monographs, and is managed by a librarian.
- DFC has a Nutrition Research Funding Program that is recognized as a credible health science research-funding agency because of its peer-review process. It seeks answers to research questions that are pertinent to the dairy products. By funding Canadian researchers at Canadian institutions and universities, DFC contributes to the development of a Canadian network of experts on nutrition and health. The research DFC support has made, and will continue to make, significant contributions to the international body of knowledge in both basic and applied science, with emphasis on bone health, cancer, heart disease and hypertension.

Sources_of_Funding: Dairy producers across Canada

Comments: As a nutritionist and the director of nutrition for the Dairy Farmers of Canada, I am very disturbed by the Joint WHO/FAO Expert Consultation Draft on diet, nutrition and the prevention of chronic diseases [Draft: 28 March 2002]. The report's bias against foods of animal origin is pervasive: from the discussion of environmental concerns to the selection of studies upon which the recommendations are based, and finally to the complete disregard of the reams of evidence demonstrating the pivotal role milk products play in a healthy, balanced diet. The omission of milk and dairy products from the Expert Consultation's recommendations is egregious and appears to be based, for the most part, on bias, misinformation and clouded thinking of the worst kind. This Draft is a testament to the fact that sometimes a powerful ideology can shape even well-meaning scientists' conclusions as strongly as any empirical evidence. It is my hope that the information in this letter will h!

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elp WHO/FAO to reconsider their position.

Contrary to the implications in the preface and throughout the Draft, there is no evidence that increased energy intake is due to an increased consumption of saturated fats. In fact, most surveys indicate that the majority of fats in the diet come from vegetable oils.¹ And, if in fact the predominance of animal foods is responsible for most diet-related noncommunicable diseases (NCDs), then how does one reconcile the fact that in India, where the consumption of "all flesh food is modest" (i.e., 22 g/cu/d on average [Section

2]), the rate of NCDs exceeds the rate of communicable diseases? Moreover, citing the North Karelia experience and Korea's high-vegetable diet is misleading since the two diets are widely divergent. And why overlook the study of the Fulani pastoralists of Northern Nigeria which found that, despite a diet high in saturated fat, the lipid profile of Fulani adults is consistent with a low risk of cardiovascular disease?2

Environment

While there is no question that protection of the environment is imperative, the points made in Section 2 of the Draft are based on specious data and are therefore not a valid basis upon which to establish policy. For example, the claim that "the increase in consumption of animal products . . . has considerable environmental repercussions" implies that agronomy is more environmentally friendly. The truth is most agricultural land in the world, nearly 70% in fact, produces grass. While grass does not constitute food for humans, ruminants such as cattle convert grass and other forages into food for humans. Forages also play a role in conserving soil on cultivated land. Moreover, cattle are not stealing grain from the mouths of humans, as the Draft implies [last paragraph of Section 2: ". . . reducing grain consumption as animal feed . . ."]. In fact, the grain cattle feed on is of a much lower grade than that which humans eat and is not fit for human consumption. Even more spuri!

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ous is the claim that "the number of people fed in a year per hectare ranges from 22 for potatoes and 19 for rice down to 1 and 2 people respectively for beef and lamb." The word fed is far from synonymous with the word nourished. A more appropriate comparison would be of the nutrients supplied by a pound of potatoes versus a pound of beef. Much less beef or lamb is required to sustain life than either potatoes or rice. This muddled thinking is followed by the erroneous statement that "animal products use far more [water] than vegetables need to grow." In fact, the opposite is true when one considers total nutrients per gram of edible food. A 100 gram serving of beef represents 13 litres of water, while it takes 30 litres of water to produce 100 grams of wheat; and the beef is considerably more nutrient dense. And increasing the supply of nutrient-dense foods is among the Draft's most important recommendations [Section 6.4].

Diabetes

The Expert Consultation ignores the overwhelming evidence that ample milk consumption is protective against many NCDs, choosing instead to subscribe to the party line that anything containing saturated fat must be unhealthy. Section 4.2 provides nutrient recommendations for the prevention of diabetes, many of which are based on the authors' contention that saturated fats are implicated in its development. Table 5 claims a probable link between diabetes and saturated fats while at the same time it completely overlooks the impact of refined carbohydrates. While there is no doubt that diabetes is related to obesity and excessive intake of total fat and refined carbohydrates, the attempt in this Draft to associate animal fats with this condition betrays bias on the part of the authors. If, as they claim, replacing saturated fats with unsaturated fats could "reverse" the trend towards increased diabetes, how does one explain the disease's high prevalence amongst Israelis, a populat!

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ion with a so-called ideal ratio of polyunsaturated fatty acids (PUFAs) to saturated fatty acids (SFAs)? In fact, Israel's high omega-6 PUFA diets are thought to be related to its population's high incidence of diabetes as well as atherosclerosis and tumorigenesis.³ And, why ignore the CARDIA (Coronary Artery Risk Development in Young Adults) study? It has shown that individuals who consumed four or more servings of milk products per day were likely to be leaner, have lower blood pressure, higher HDL levels and less diabetes than those who consumed the least amount of dairy products.⁴ What's more, CARDIA showed that the beneficial impact of dairy consumption on each component of the insulin resistance syndrome (IRS) occurred independently of other lifestyle factors and dietary variables, sex, age and race. It also found no association between high LDL and dairy consumption.⁴

CVD

Of course, as Section 4.3 of the Draft [Nutrition recommendations for the prevention of cardiovascular disease (CVD)] acknowledges, IRS is associated not only with an increased risk of diabetes, but CVD as well. But here, once again, the substantial evidence of a link between CVD and high intakes of linoleic acid⁵⁻⁸ is ignored in favour of targeting saturated fats. The authors of the Lyon Diet Heart Study⁹ pointed out that dietary clinical trials that lowered SFA and raised PUFA intake in an effort to lower cholesterol failed to improve the overall clinical prognosis of their experimental groups. They had to lower n-6 PUFAs and increase n-3 fatty acids to lower cardiovascular and all-cause mortality in the experimental group.⁹ Table 6 grossly distorts the facts by claiming that the evidence is convincing that linoleic acid and potassium decrease CVD risk while contending there is insufficient evidence that calcium is protective, and altogether ignoring conjugated linoleic acid!

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(CLA). Not only is there substantial evidence linking calcium to reduced risk of hypertension and stroke,¹⁰⁻¹² there is equally impressive research suggesting a protective effect of animal fats.¹³⁻¹⁵ And, CLA – a fatty acid derived mainly from dairy products – has been shown in animal studies to help prevent heart disease.^{16,17} Moreover, the Table fails to acknowledge the role of myristic acid in elevating HDL levels¹⁸ and also ignores the mountain of evidence showing that animal fats are, at worst, neutral in relation to CVD.^{2,3,19-24} (Incidentally, positioning carbohydrate as having insufficient evidence for increased risk while omitting refined as a qualifier is disingenuous at best.) Of course, any discussion of the impact of diet on CVD would be incomplete without mentioning the findings of the Dietary Approaches to Stop Hypertension (DASH) study. It showed unequivocally that when a daily diet rich in fruits and vegetables also includes 2.7 servings of milk, blood pressure!

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re is substantially lowered, and that this combination diet is actually a viable alternative to monotherapy for mild hypertension.^{25,26} The fact is, a large amount of epidemiological evidence has shown that the consumption of milk and dairy products is associated with a lower risk of heart attack^{19,27} and stroke.^{11,14} Unfortunately, this evidence is simply being ignored by the Expert Consultation who appear to have completely bought into the animal fats/heart disease theory.

Cancer

In Section 4.4 [Nutrient recommendations for the prevention of cancer], the Expert Consultation states that “research to date has uncovered few definite relationships,” but that modest evidence suggests that fruits and vegetables may reduce the risk of cancer. Meanwhile, once again, they overlook the fact that animal studies have repeatedly demonstrated that CLA has anticarcinogenic properties, blocking tumour growth and metastasis from the breast.²⁸⁻³⁰ The apparent impact on breast cancer risk is particularly compelling. A study in Norway of almost 49,000 women has shown that milk consumption as an adult and during childhood each tended on its own to be protective, but that when milk drinking was customary during both stages of life, a clear trend toward lower rates of premenopausal breast cancer was observed with increasing milk consumption.³¹ When compared with women who reported no or low consumption of milk on both occasions, women with moderate milk consumption had a re!

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duced incidence rate of breast cancer of about 25%, whereas women with high milk consumption on both occasions had a reduced rate of about 50%.³¹ In addition, evidence from the Kuopio Breast Cancer Study (which assessed the diets of breast cancer patients and healthy controls) revealed an especially significant inverse association between breast cancer and the consumption of cheese, ³² which has a particularly high concentration of CLA. Mean cheese consumption was 30% lower in postmenopausal breast cancer patients compared to controls.³² In fact, the proportions of serum CLA, myristic acid and trans-vaccenic acid were all significantly lower in postmenopausal cases than in controls.³² And that lends further credence to the importance of CLA given that trans-vaccenic acid, the major trans fatty acid in milk, is converted to CLA by the body.³³

CLA is not the only nutrient in milk shown to help reduce cancer risk. International incidence rates for colon cancer – the second most common cause of cancer death in the Western world – suggest an inverse relationship with dietary calcium and/or vitamin D intake. There is both biochemical and biological evidence that calcium and/or vitamin D reduces the oncogenic properties of colon cancer cells,³⁴ probably due to their ability to lower aqueous fecal concentrations of bile acids and fatty acids.^{34,35} And calcium-rich dairy foods have been shown to significantly improve several parameters of cell proliferation and to effectively alter biomarkers of risk for colon cancer from a high risk to lower risk levels.^{34,35}

Dental disease

How any discussion of dental health [Section 4.5] can fail to emphasize the importance of dietary calcium is a mystery. The evidence that hard cheese is protective is rather more than probable [Table 8] or possible [Table 9]. Research continues to accumulate demonstrating that, in addition to helping to promote overall health,³⁶ cheese helps prevent both coronal^{37,38} and root caries.³⁹ In fact, studies indicate that cheese as a snack or after a meal helps protect the teeth against cavities.^{37,40}

Osteoporosis

In section 6.2 [Leadership issues/capabilities], the Expert Consultation stresses the importance of understanding the connections between early childhood nutritional status and later disease. Unfortunately, there is glaring evidence of the failure to do so in several sections of their Draft, most especially in Section 4.6 [Nutrient recommendations for the prevention of osteoporosis]. The claim is made that a combination of calcium and vitamin D is beneficial for “older people.” This is myopic in the extreme. It has been widely acknowledged that osteoporosis is, in reality, a pediatric disease that manifests itself in old age.⁴¹ The skeleton develops through infancy, childhood and puberty, reaching maturity by late adolescence or early adulthood.⁴² Over the period from 10 to 17 years, skeletal mass in a typical adolescent female increases to roughly 800 mg of calcium, eight times the amount deposited in the next 18 years.^{42,43} In fact, approximately 26% of adult calcium is ban!

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ked during the two adolescent years of peak skeletal growth.⁴⁴ Studies indicate that nearly maximal bone mass development at sites particularly susceptible to osteoporotic fractures later in life might be achieved before the end of the second decade, somewhat earlier in girls than in boys.⁴⁵⁻⁴⁷ Dietary calcium is the main determinant of vertebral mineral density (the association being independent of age, body weight or sexual maturation) observed in both sexes, especially during the prepubertal period. Intakes below 1,000 mg of calcium per day before and during puberty may have destructive consequences on the skeleton.⁴⁸

Despite the glaring omission of dairy products from the Draft’s list of “prudent dietary and lifestyle recommendations” vis a vis osteoporosis, the world’s leading experts in the disease agree that dairy calcium is among the best ways to ensure adequate calcium in the diet and reduced risk of osteoporosis.⁴⁹ Because of its negative impact on calcium balance, protein has been thought – as the Draft acknowledges – to be detrimental to bone health.^{50,51} But protein-induced urinary calcium loss is easily offset by getting recommended calcium intakes.^{50,51} The truth is, protein accounts for one third of bone mass⁵² and is, therefore, essential to healthy bones. Milk, with its combined high calcium content and high quality protein, is a natural for helping to prevent osteoporosis. It strains credulity to think that the individuals responsible for this report are unaware of the massive amounts of research showing that adequate calcium is important at every stage of life to reduce the!

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risk of osteoporosis.

Conclusion

To conclude, in section 6.4 [Enabling environments], the Draft stresses the importance of choosing nutrient-dense foods, citing fruits and vegetables in particular. While there is no denying the importance of plant-based foods, I am unaware of any fruit or vegetable with the same abundance and variety of vitamins, minerals, and other “essential nutrients” as one finds in a glass of milk or a serving of most dairy products. As well as being the very best source of calcium, milk also contains protein (which helps promote healthy bone growth), phosphorus (which combines with calcium in the crystals of bones and teeth), magnesium (which enhances bone mineralization) and vitamin A (which improves bone remodelling). Milk consumption also increases intakes of folate, riboflavin, and vitamin

B12.^{53,54} Deficiency of vitamin B12, which is better absorbed from milk than from meat, fish, or poultry⁵⁵ – has been linked to diminished mental acuity. In fact, controlled studies of macrobiot!

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ic children (who avoided milk/milk products in early childhood) demonstrated significantly impaired cognitive abilities in adolescence compared to those who followed a balanced diet that included milk.^{56,57}

There is agreement in the scientific community that a diet poor in calcium is considered a marker for a poor diet.^{58,59} Although plant foods with calcium are widely considered to be as viable a source of calcium as dairy products, even when they contain substantial calcium, the body may only use a negligible portion. Phytate-containing legumes and grains as well as vegetables with oxalates offer substantially reduced calcium bioavailability compared to milk. Thus, while about two and a half servings of oxalate-rich spinach seem to provide as much calcium as one serving of milk, it would take more than 15 servings for the body to absorb the same amount. What's more, in a recent presentation at the Smart Gourmet Conference in Toronto, Canada, Dr. Robert Heaney emphasized that studies of colon cancer, high blood pressure and obesity indicate that dairy calcium is more effective than calcium supplements in providing protection from these chronic diseases. According to Heaney, !

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“while current dietary calcium intake recommendations reflect the amount of calcium believed to be necessary for optimum bone health, the emerging understanding of the protective value of high calcium intakes in nonskeletal disorders means that these recommendations need to be reevaluated to help ensure total body health.”⁶⁰ Studies of the protective effect of calcium in these other disorders indicate that intakes above 1200 mg per day would be advantageous for all body systems in all adults.⁶⁰

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