Press release

Impact of whole dairy matrix on musculoskeletal health and aging.

E-World Congress on Osteoporosis*, 22 August 2020. In Europe, osteoporosis affects over 22 million women aged over 50 (22% of the population) and 5.5 million men (7% of the population). It is responsible for more than 3 million fractures each year, including 620,000 hip fractures, and results in 2 million DALYs (disability adjusted life years). Between 5% and 20% of the elderly suffer from sarcopenia, the loss of muscle mass and strength, further increasing the risk of fractures due to falls. In addition to the individual suffering resulting from osteoporosis and sarcopenia, they pose a tremendous economic burden on health care.

Scientists and healthcare professionals therefore joined the E-session dedicated to the outcomes of an expert workshop (held in June 2019), which examined the impact of the dairy matrix on musculoskeletal health. The workshop, organized under the auspices of the European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (ESCEO) also produced a consensus statement in a scientific paper[1].

*E-World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF- ESCEO) which was held on August 20-23, 2020.

We eat foods, not nutrients: the matrix effect

Dietary recommendations have historically focused on single nutrients with levels aimed at ensuring intakes sufficient to meet bodily requirements. This has been useful in avoiding and treating deficiencies, but the approach has severe limitations in the prevention of non-communicable diseases where 'food matrix' effects have been observed. "Cheese is a good example, despite its saturated fat content, the majority of epidemiological studies report that cheese consumption does not increase the risk of cardiovascular disease" said Prof Ian Givens (University of Reading). That is because we eat food, not nutrients and foods are more than the sum of the nutrients they contain. "*The effect of a given nutrient may vary dramatically depending on its food source, the composition and the physico-chemical structure of the food"* explained Prof Givens *For example, calcium bioavailability is generally much higher when provided by dairy products than by vegetables*". This highlights the necessity of viewing and investigating dairy as a whole food exerting matrix effects.

Dairy matrix is beneficial to muscle and bone heath[1]

Several studies have investigated the effect of dairy products on musculoskeletal health. Evidence supports that fermented dairy products, in particular, exert beneficial effects on bone growth and

mineralization and reduce fracture risk. The effect cannot be explained by single nutrients in dairy, which suggests that a matrix effect is responsible.
"*Evidence from interventional and observational studies support that dairy products exert beneficial effects on musculoskeletal health during the life cycle: growth and bone mineralization in children and adolescents, attenuation of bone loss and sarcopenia later in life, and reduce fracture risk*" said Dr Sandra Iuliano (University of Melbourne). The effect cannot be explained by single nutrients in dairy only such as calcium, proteins or vitamin D, which suggests that a combined or matrix effect may be responsible. *"Given the widespread availability and affordability of dairy foods, it is a reasonable and potentially feasible public health approach to fracture prevention",* Dr Iuliano concluded.

1 Geiker NRW et al. Impact of whole dairy matrix on musculoskeletal health and aging – current knowledge and research gaps. Osteoporos Int 2020 Apr; 31(4) :601-615. doi: 10.1007/s00198-019-05229-7.

Dietary guidelines should be food based

Diet is changing rapidly, including increasing intake of new plant-based products motivated by environmental considerations
However, such changes need close follow-up as to assess if they have a detrimental effect on PBM and muscle development, during growth, leading eventually to increased risk of bone fractures, diabetes, and obesity.
Considering the importance of the dairy matrix for musculoskeletal health, the expert panel suggested that whole foods, not only single nutrients, need to be assessed in future observational and intervention studies of health outcomes, in an holistic approach.
"Furthermore, the importance of the matrix effect on health outcomes argues in favour of making future dietary guidelines food based" concluded Prof Arne Astrup (University of Copenhagen)

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