

# Foods and health potential: is food engineering the key issue?

## Editorial

Monteiro et al.,<sup>1</sup> have proposed a simple but innovative classification of food products based on the intensity of processing: unprocessed/minimally processed foods (Group 1); processed culinary ingredients (Group 2); or ultra-processed ready-to-eat or ready-to-heat food products (Group 3).<sup>2,3</sup> Group 1 corresponds to « no processing, or mostly physical processes used to make single whole foods more durable, accessible, convenient, palatable or safe », specific processes including « cleaning, portioning, removal of inedible fractions, grating, flaking, squeezing, drying, chilling, freezing, pasteurization, fermentation, fat reduction, bottling, vacuum and gas packing, and packaging »; Group 2 corresponds to « Extraction and purification of components of single whole foods, resulting in producing ingredients used in the preparation and cooking of dishes and meals made up from Group 1 foods in homes or traditional restaurants, or else in the formulation by manufacturers of Group 3 foods. Specific processes include refining, milling, pressure, hydrogenation, hydrolysis and use of enzymes »; and Group 3 corresponds to « processing of a mix of Group 2 ingredients and Group 1 food stuffs in order to create durable, accessible, convenient and palatable ready-to-eat or ready-to-heat food products liable to be consumed as snacks or to replace home-prepared dishes. Specific processes include baking, frying, deep frying, use of additives and cosmetics, addition of vitamins and minerals, salting, canning and sophisticated forms of packaging ».<sup>2</sup>

Such a classification is interesting because the Western diet, that has been widely chosen in Western countries, and now in emerging countries like Brazil or India, globally corresponds to a high adherence to ultra-processed food products of Group 3, and is also associated with increasing prevalence of diet-related chronic diseases such as overweight, obesity, type 2 diabetes, cancer and cardiovascular diseases.<sup>4</sup> Therefore, as proposed by Monteiro et al.,<sup>1</sup> it seems that it is not the original/natural foods, nutrients and/or phytochemicals that are to be considered when searching for causes of chronic diseases, but rather the intensity and the nature of technological processes.

Indeed, it is today well-known that the more products are processed and refined, the more they have lost their initial and natural food structure - and the accompanying nutrient interactions - the less they are satiating and the more they contain simple sugars, fat and salt, all of these nutritional characteristics being not favorable to a sustainable health.<sup>5</sup> Cereal products are a good example of this issue: they have lost their nutrient-density through excessive refining, their original food structure through excessive processing and their natural composition through excessive supplementation with salt (as in bread), fat (as in some breakfast cereals for children) and simple sugars (as in breakfast cereals or cereal bars) to render them more palatable, and in the end to make their consumption increase for the benefit of agro-food industry. Cereal-based foods health potential needs therefore to be improved via reverse engineering, i.e., to define the nutritional needs and to formulate healthy cereal products from these needs. Such an approach should be done with a sustainability perspective, notably preserving environment and allowing marketing of products affordable for all socio-professional categories, and respectful of the different culture worldwide.<sup>6</sup>

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The new 'philosophy' to emphasize behind these issues is to move forward technological processes less deleterious towards natural foods through minimal processing. It is not saying that ultra-processing should be abandoned or is useless: innovation and creativity is very necessary and it is normal that agro-food industry and food scientists need to create new foods, even via ultra-processing. Eating pastries, sweets and/or innovative dairy products is part of the pleasure or conviviality/friendliness that we also need to eat, and of well-being in the end. But such products should not be the basis of our diet: rather, foods from Group 1 should be the core of our diet! To realize this, we need to develop a more global and holistic view of foods and to consider that the whole is more than the sum of the parts: as a result, we will more preserve their natural matrix - and hence their satiating potential - and consider that nutrient interactions and the subsequent synergy of action of nutrients that composed foods is a positive and indispensable characteristic of foods for a sustainable health.<sup>7</sup>

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## Conflict of interest

Author declares that there is no conflict of interest.

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