Editorial

Could Increasing Minimally Processed Food Consumption Lower Body Fat Mass?

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Overweight and obesity has been a major public health problem globally. It was estimated that more than 2.1 billion adults were affected by overweight or obese in 2021 worldwide, about one fifth of whom lived in China[1]. The forecast of the leading country with the largest overweight and obese population in 2050 globally[1], if no effective strategies were applied on overweight/obesity control.

Obesity is considered as a condition with excess adiposity. Adiposity could be measured by using various techniques including body mass index (BMI), bioelectrical impedance analysis (BIA), dual energy X-ray absorptiometry (DXA), Computed Tomography (CT) and Magnetic Resonance Imaging (MRI)[2]. No one size-fits-all measurement could accurately assess body fat in the population studies. BMI is the most commonly used method to assess overweight and obesity across various age groups[3–5]. BIA or DXA was used to measure body fat mass in some population based studies[6–8].

It's critical and urgent to identify effective intervention ways to reduce body fat mass for preventing obesity epidemic. A paper published in this issue of biomedical and environmental science showed that higher coarse cereal consumption was inversely associated with body fat percentage in children aged 6–17 years in China[9]. The paper was based on a nationwide large scale cross-sectional study of children in China. Children aged 6–17 years (n = 48,305) were enrolled from 28 districts/counties in 14 provinces across seven regions of China, in which BIA was used to assess body adiposity. As shown in the study, coarse cereal consumption of these population was quite low (median intake ranged from 5.7 g/d/1,000 kcal to 8.4 g/d/1,000 kcal), compared to the recommendation from the Chinese Dietary Guidelines. Although the results were not causal conclusive by the nature of the study design, it urges to study the effects of coarse cereals interventions on body fat mass changes in similar low coarse cereal consumption situation as in China. A randomized crossover trial was conducted to evaluate impacts of minimally processed food consumption over 8 weeks' period of overweight or obese adults on body weight and body composition changes in UK[10]. The results showed that minimally processed foods could reduce 0.98 kg fat mass and 0.76% body fat percentage, compared to ultra-processed foods.

A recent systematic review on the relationship between ultra-processed food and obesity pooled 9 cross-sectional studies and 3 cohort studies, in which BMI was used to assess overweight and obesity[11]. Totally 140,557 subjects were included in the meta-analyses. The results showed that ultra-processed foods consumption was associated with greater odds of overweight, obesity and abdominal obesity. Compared to the lowest consumption category of the ultra-processed foods, the highest consumption group had *OR* (95% *CI*) of 1.55 (1.36, 1.77), 1.36 (1.14, 1.63), or 1.41 (1.18, 1.68) for obesity, overweight or abdominal obesity, respectively. For each 10% increase of ultra-processed food consumption per daily energy intake, relative risk increased by 7% for obesity.

The relationship between ultra-processed food and overweight, excess adiposity may be due to the following potential mechanisms[12]. Ultra-processed foods (UPFs) are commonly energy dense with high fat and sugar content, which displace minimally processed food intake with lower energy dense. UPFs with soft texture and intense flavors are more palatable, which facilitate consumers to consume greater energy. Peptide YY concentration, an appetite-suppressing hormone was detected to be lower after consuming UPFs compared to minimally processed foods. In addition, social characteristics of

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UPFs including food marketing, convenience, and affordability may also contribute extra energy intake.

Various international organizations including the World Health Organization and Food and Agriculture Organization, and national food-based guidelines from China, the UK, and Mexico et al. recommend that minimally processed foods (e.g. whole grains) should be part of their diet and highly-processed foods and sugar-sweetened beverages should be reduced. The USA just released its dietary guideline (2025–2030), which emphasizes whole grain intake and limit highly processed food intake. Minimally processed foods could have multiple benefit beyond reducing body fat mass. We should continuously promote minimally processed food through various ways for better health.

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