




Abstract

Comparative Advantages of Fatty Acid Composition and Nutritional Indices of Specific Edible Plant Oils [†]

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Abstract: A variety of specific plant oils produced from plants other than sunflowers and olives has been offered on the food market, most of them obtained using cold pressing in order to preserve sensitive oil components. The objective of this study was to evaluate their fatty acid (FA) compositions by means of nutritional quality indices. FA profiles (37 FAs) of 20 commercially available specific edible plant oils were obtained using GC-FID and further evaluated by calculating lipid quality indices. FA profiles and their corresponding quality indices showed the expected variability, depending on the plant source. For the purpose of comparison, the same indices were determined for sunflower and olive oil: the polyunsaturated-to-saturated FA ratio (PUFA/SFA) was 5.1 and 0.5, the hypocholesterolemic/hypercholesterolemic ratio (HH) was 13.0 and 6.8, the index of atherogenicity (IA) was 0.08 and 0.14, the index of thrombogenicity (IT) was 0.23 and 0.24, and the unsaturation index (UI) was 146.6 and 93.5, respectively. A higher PUFA/SFA ratio is beneficial for cardiovascular health, as are a lower IA and IT. The UI indicates stability of unsaturated FAs during storage and processing. Flaxseed oil was the only one showing a PUFA/SFA ratio higher than sunflower oil (5.8). Regarding IA, flaxseed, almond, apricot, plum, hazelnut, macadamia, and sea buckthorn oils were similar to sunflower oil; sesame, black cumin, poppy, pumpkin, avocado, raspberry seed, argan, moringa, and rose seed oils resembled olive oil; and palm oil was isolated at 0.80, while coconut oil reached 23.4. Flaxseed, almond, apricot, plum, raspberry seed, macadamia, rose seed, and sea buckthorn oils showed a lower IT than sunflower and olive oils (range 0.06–0.18). Coconut and palm oils showed lower HH ratios than olive oil, whereas, in the case of flaxseed, almond, apricot, plum, hazelnut, and sea buckthorn oils, this ratio was higher than the one in sunflower oil (range 14.0–16.1). Flaxseed oil was characterized by the highest UI (208.4), while others were distributed along the 90–170 interval (except coconut and palm oils). According to their nutritional quality indices, a variety of plant oils are valuable sources of FAs in human nutrition.

Keywords: plant oil; quality index; fatty acid



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