

DEVELOPMENT OF A PLANT-BASED OMEGA-3-RICH FAT SPREAD

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Omega-3, an anti-inflammatory essential fatty acid, significantly reduces cardiovascular disease risk. This study aimed to develop a plant-based fat spread rich in omega-3 using flaxseed, sesame, and peanuts, fulfilling 50% of an adult's daily requirement. Three fat spreads were prepared with varying ingredient ratios, and a sensory evaluation by thirty untrained panellists identified the optimal spread (peanut: sesame: flaxseed - 49:30:20). The selected fat spread was further optimized using sugar, salt, soy lecithin, and potassium sorbate. Proximate composition, fatty acids (FA), peroxide value, and microbial counts during storage were analysed in the final product (peanut: sesame: flaxseed: sugar - 46:30:20:1.5). The final spread contained 45.88±0.15% crude fat, 22.59±0.22% crude protein, 7.08±0.17% crude fibre, 4.38±0.42% ash, 2.72±0.16% moisture, and 17.35% carbohydrate. As per the FA profile, the fat spread has ~18% of oleic acid (monounsaturated FA) and ~16% of linoleic acid (omega-6 FA) with only ~7% of saturated FA. Per serving size of the fat spread (20 g) contained 3.83 g of omega-3 FA which is sufficient to fulfil ~50% of the recommended daily allowance (RDA) for an adult. The keeping quality assessments up to 14 days, in terms of peroxide value and standard enumerations of total bacteria and yeast and mould counts, reported < 10 m Eq Kg⁻¹, <1×10⁴ CFU mL⁻¹, and <100 CFU mL⁻¹, respectively Which were well below the recommended safe levels. Moreover, on the 7th day, the peroxide value was recorded as 0.54 m Eq kg⁻¹. While at the end of the 14th, it reached 1.28 m Eq kg⁻¹, and fat spread was deemed acceptable for consumption. The omega 3:6 ratio of the final product was 1:4.1 Hence, the developed plant-based fat spread can be recommended for use as a food product to provide at least 50% of RDA of omega-3 for adults.

Keywords: Fatty acids, Flaxseed, Peanut, Sesame