SOXHLET DEFATTING AND ITS EFFECT ON THE ANTIOXIDANT CAPACITY OF COLD-PRESSED OILSEED CAKES

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ABSTRACT

Cold pressing of oilseeds such as poppy, pumpkin, and sesame yields high-quality edible oils and generates nutritionally rich oilseed cakes that retain a certain proportion of residual oil. This study aimed to quantify the residual oil content in cold-pressed poppy, sesame, and pumpkin seed cakes and to evaluate the effect of its complete removal by Soxhlet extraction on their antioxidant capacity. The results showed that the highest proportion of residual oil remained in pumpkin seed cake, while the lowest was found in sesame cake. In terms of antioxidant properties, poppy seed cake exhibited the highest antioxidant capacity, whereas sesame cake showed the lowest. Following Soxhlet defatting, antioxidant capacity increased in all samples. The most pronounced enhancement was recorded in poppy seed cake, while the smallest increase was observed in pumpkin seed cake. These findings indicate that the removal of residual oil contributes to an improvement in antioxidant capacity; however, this effect is not directly proportional to the amount of oil removed. Although pumpkin seed cake contained the highest residual oil content and underwent the greatest degree of oil extraction, it exhibited the least change in antioxidant activity. This suggests that factors other than residual oil content, such as the composition of phenolic compounds, play a significant role in determining the antioxidant potential of defatted oilseed cakes. Overall, Soxhlet defatting can be considered a useful step in enhancing the functional properties of oilseed cakes, supporting their potential application as value-added ingredients in food and nutraceutical formulations.

Keywords: pumpkin seed, sesame, poppy seed, DPPH, ABTS.