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## Characteristics of functional low fat ice milk produced with seeds "flax, sunflower or pumpkin" powder and stevia

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### Abstract:

The aim of this study is to fortify low-fat ice milk with various seeds powder, such as flax, sunflower, and pumpkin by different percentages (1, 2, 3, 4 and 5 %), as well as stevia (5% w/w), to provide a functional product. Due to the presence of minerals, phenolic compounds, and antioxidant activity in this product, it has functional, nutritional, and health advantages. The chemical, physical and sensory properties of the resultant ice milk were studied compared with control free from any additives. The physicochemical properties of the resultant ice milk were significantly affected over the control. The preliminary experiments results showed that the best added percents from flax, sunflower and pumpkin seeds powder were 2, 4 and 4% (w/w), respectively, also the added percentage of seeds powder to the ice milk mixes leads to an increase in fiber, total nitrogen, fat and minerals content of the final product. According to the sensory evaluation, the ice milk prepared with 4 % (w/w) pumpkin seeds powder was recorded the highest values of acceptance for flavor, melting quality, color & appearance, body & texture and overall acceptability comparing to the other addition (flax and sunflower seeds).

Moreover, the obtained results revealed that the pH of different ice milk samples was affected by the type of addition. The control ice milk had the highest pH value; on the other hand, the pH values of the ice milk supplemented with different seeds powder noticed that it decreases. The overrun and melting resistance of the final ice milk product also decreased compared with control. Using of stevia (sucrose replacement) in ice milk mixes led to a decrease in the amount of calories compared to the control.

### Keywords:

Functional ice milk, flax seeds, pumpkin seeds, sunflower seeds powders, stevia, antioxidant activity, phenolic compounds, health benefits, physical and sensory evaluation.

