

Investigating the effect of storing sesame seeds at refrigerator temperature and ambient temperature on phytochemical compounds and nutritional value of sesame seeds

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Abstract

Sesame is considered one of the most crucial oil seeds globally, containing a high level of unsaturated fatty acids, protein, and minerals. The nutritional value of sesame seeds is influenced during storage by the storage conditions, which impact metabolic pathways in the seeds. This study examined how storing sesame seeds at room temperature or in the refrigerator affects the phytochemical compounds in the seeds. The study examined the levels of phenolic compounds, antioxidant capacity, oil content, fatty acid composition, carbohydrates, proteins, and proline in the ethanol extract and sesame oil. This study's findings indicated the level of phenolic compounds in sesame seeds stored at room temperature rose, but storing sesame seeds in the fridge led to a decline in phenolic content. The antioxidant capacity of sesame seeds was reduced by both storage conditions. There was no significant difference in the level of sesame oil in the samples studied compared to the control sample. Storing sesame seeds in the refrigerator led to an 18% rise in oleic acid in comparison to linoleic acid, while at room temperature linoleic acid increased by 2.4% compared to oleic acid to support cell membrane maintenance. Sesame seeds showed an increase in carbohydrate and proline levels when stored in refrigeration, possibly because of their osmotic protection function. Final statement: The analysis of the current research findings reveals that storing sesame seeds at room temperature leads to an elevation in the levels of linoleic acid (omega-6) and phenolic compounds, thus enhancing the overall quality and nutritional benefits of sesame seeds.

Keywords: Antioxidant, Fatty acid, Sesame, Storage.