

TRENDS IN MEDICINAL AND ENVIRONMENTAL SCIENCE: AN INTRODUCTION

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CHAPTER – 1

NUTRITIONAL ANALYSIS AND EVALUATION OF FOOD PRODUCTS MADE FROM DATE SEED POWDER

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Abstract

The date palm (*Phoenix dactylifera* L.) is a historic fruit plant integral to Middle Eastern cultures, including those of Saudi Arabia. People typically consume the fruit of the date palm but often discard the nutrient-rich seeds. This study explores the potential of date seeds for developing high-nutrient food products. Chemical analysis determined the nutritional content of date seed flour, which was then used to evaluate various food products. The objectives were: i. To develop a method for producing date seed flour and determine its nutritional profile. ii. To assess various food items produced using date seed flour and scrutinize their nutritional composition. The study also explored the preparation of date seed-based dips and a caffeine-free coffee alternative. The production of date seed powder involved washing, sun-drying, roasting, and storing the seeds. The nutritional analysis showed 3.4% moisture, 10.03% protein, 78.97% carbohydrates, 6% fat, and 1.6% ash. Two dip variations were created: one with honey and date seed powder, and another with tamarind and date seed powder, showcasing the nutritional potential of date seeds. This study emphasizes the value of date seed powder in developing novel food products and highlights its potential as a sustainable, nutritious caffeine-free coffee alternative.

- Review, Appl. Sci. 2021, Vol. 11, Page 5159 11 (2021) 5159.
<https://doi.org/10.3390/APP11115159>.
- [45] D. Kumar, K. Hazra, P.V.V. Prasad, R. Bulleddu, Honey: an important nutrient and adjuvant for maintenance of health and management of diseases, J. Ethn. Foods 2024 111 11 (2024) 1–11. <https://doi.org/10.1186/S42779-024-00229-3>.
- [46] Y. Ranneh, A.M. Akim, H.A. Hamid, H. Khazaai, A. Fadel, Z.A. Zakaria, M. Albujja, M.F.A. Bakar, Honey and its nutritional and anti-inflammatory value, BMC Complement. Med. Ther. 2021 211 21 (2021) 1–17. <https://doi.org/10.1186/S12906-020-03170-5>.
- [47] Y. Hu, Z. Li, S. Wang, X. Wu, The difference in composition and nutritional potency of honey extracted by centrifugation and pressed processes, Food Qual. Saf. 7 (2023). <https://doi.org/10.1093/FQSAFE/FYAD018>.
- [48] W.S. Ayoub, Ritu, I. Zahoor, A.H. Dar, S. Farooq, T.A. Mir, T.A. Ganaie, S. Srivastava,
- [49] V.K. Pandey, A. Altaf, Exploiting the polyphenolic potential of honey in the prevention of chronic diseases, Food Chem. Adv. 3 (2023) 100373.
<https://doi.org/10.1016/J.FOCHA.2023.100373> CHAPTER 2