

Abstract

A Beneficial Bio-Waste with a Zero-Waste Approach: Peanut Shell [†]

Hakan Çelebi * , Gül den Gök , Tolga Bahadır , İsmail Şimşek  and Oğuzhan Gök 

Environmental Engineering Department, Engineering Faculty, Aksaray University, Centre Campus, 68100 Aksaray, Turkey

* Correspondence: hakancelebi@aksaray.edu.tr; Tel.: +90-382-288-35-98

[†] Presented at the 2nd International Electronic Conference on Biomolecules: Biomacromolecules and the Modern World Challenges, 1–15 November 2022; Available online: <https://iecbm2022.sciforum.net/>.

Abstract: The recycling of food and agricultural waste, which is released as a result of domestic and agricultural uses, instead of throwing them into the garbage cycle and the environment, is of great importance both for the protection of the environment and the minimization of other environmental pollutants. In recent years, human population growth, pandemic developments (COVID-19), climate change and global warming have increased significantly. These increases endanger environmental health. Therefore, researchers are investigating different alternatives in terms of both human and environmental health. This paper evaluates the possible use of the shell part of the peanut, which is a food with high nutritional value. Peanut (*Arachys hypogaea*) is a plant from the Fabaceae family. Peanut is a valuable food product with a wide range of uses all over the world. Their shells are an indispensable part of the garbage cycle and have a fibrous and lignocellulosic (cellulose content: 45%, hemicellulose content: 6%, lignin content: 36%) structure. In addition, it has a very slow degradation rate under natural conditions, which is a great advantage for other wastes. Today, most peanut shells are disposed of by incineration and burial, which causes environmental pollution. For this reason, this waste should be used in various sectors with a zero waste approach. Increasing environmental pollution all over the world day by day, unconscious energy consumption and climate change have led countries to seek alternative solutions for environmental issues and to develop environmentally friendly-technological methods. Peanut shell is used intensively in fields such as compost material, energy sector (biofuel, biodiesel, CO₂ emission reduction, etc.), cosmetics (nail polish, lipstick, etc.), soil improvement, drinking water and wastewater treatment (adsorbent, nanomaterial, filter etc.). In this study, the use of peanut shells from Osmaniye province as an environmentally friendly, economical and easily available biosorbent was investigated.

Keywords: bio-waste; biosorbent; environmental health; peanut; peanut shell

Citation: Çelebi, H.; Gök, G.; Bahadır, T.; Şimşek, İ.; Gök, O. A Beneficial Bio-Waste with a Zero-Waste Approach: Peanut Shell. *Biol. Life Sci. Forum* **2022**, *20*, 8. <https://doi.org/10.3390/IECBM2022-13381>

Academic Editor: Christophe Hano

Published: 1 November 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Supplementary Materials: The presentation material of this work is available online at <https://www.mdpi.com/article/10.3390/IECBM2022-13381/s1>.

Author Contributions: Conceptualization, H.Ç., and İ.Ş.; methodology, H.Ç.; investigation, T.B. G.G.; resources, O.G.; data curation, H.Ç.; writing—original draft preparation, H.Ç.; writing—review and editing, O.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.**Institutional Review Board Statement:** Not applicable.**Informed Consent Statement:** Not applicable.**Data Availability Statement:** Not applicable.**Conflicts of Interest:** The authors declare no conflict of interest.