

Abstract

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

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Abstract: The recycling of food and agricultural wastes, which are 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 peanut, which is a food with high nutritional value. Peanut (*Arachis 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 of the 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 sector (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

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