SERBIA

Elementary school
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CLIMATE BOX

2nd International Schoolchildren's Festival

INNOVATIVE USE OF WASTE OBTAINED DURING CEREAL PROCESSING:
OBTAINING ACTIVATED CARBON AND WATER PURIFICATION

The project deals with the application of circular bioeconomy in the use of cereal waste and its transformation into valuable products, such as activated carbon, so it is assumed that it can be effectively applied in the future, because waste has a direct impact on climate change.

Problem: Waste generated during grain processing (making of beer) represents a significant environmental challenge due to its large quantities and impact on the environment. There is a need to find sustainable and environmentally friendly ways for its recycling and reuse, especially in the context of contaminated water treatment.

Subject of the work: The subject of the research is the innovative use of waste generated during grain processing, with a focus on obtaining activated carbon from the beer trop and its application in the purification processes of contaminated water.

The goal of the work: The aim of the work is to examine the potential of cereal waste to obtain activated carbon and investigate its application in water treatment, with the aim of finding sustainable solutions that contribute to waste reduction and improving the efficiency of water purification.

Collection of beer waste

Methods: The production of activated carbon from beer waste (BSG) includes several steps: collection of waste from the brewery, drying at 105°C for 3 days, chemical treatment with a solution of phosphoric acid and potassium hydroxide, thermal treatment at high temperatures, and final testing for adsorption capacity contaminants from industrial wastewater.

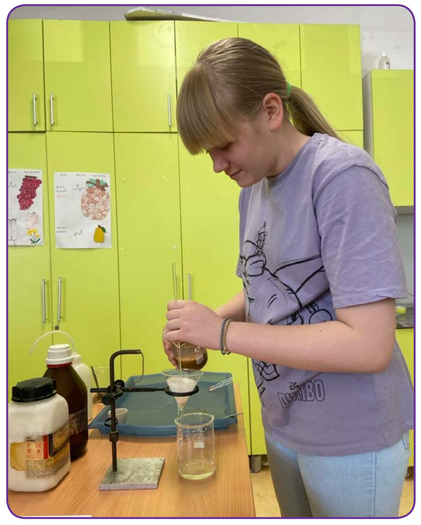
Results: After pyrolysis and activation, the obtained activated carbon was used to filter industrial wastewater. Charcoal has shown significant capacity to remove impurities, resulting in cleaner water after treatment. The process has also led to a reduction in the amount of waste being disposed of, which is important for reducing CO_2 emissions and the burden on landfills.

Drying of beer waste

Technical processing

Activated carbon

Water filtration as final use



Conclusion:

Beer trop (BSG) is a valuable by-product of the brewing industry with the potential to produce activated carbon for water purification.

Synthesized activated carbon from BSG shows high efficiency in the adsorption of contaminants from industrial wastewater.

Biotechnological conversion of agricultural by-products like BSG contributes to the circular bioeconomy, reducing waste and CO_2 emissions.

This innovative approach provides economic and environmental benefits through the use of inexpensive raw materials and reduced storage costs.

Innovations in biotechnology: This technology represents an innovation in the field of waste processing and can lead to the development of new products and processes, such as carbon nanotubes or new filtration methods.

Imagine that waste can change the world! The beer trope, once useless, is now key in the fight for cleaner water. Find out how - the future is ahead of you!

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