

Cork boiling wastewater treatment and biogas production

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1. Introduction - Cork boiling wastewater (CBW) is a very important effluent of the cork processing industry which is produced in the western Mediterranean region and western north of Africa. CBW has no utility till now constituting an environmental hazard. It is a complex liquid stream which is produced during the boiling of the cork planks. This process step is one of the key operations in cork processing. CBW is known as having suspended and dissolved solids and organic materials such as phenolic compounds being characterized by a low biodegradability and an acid pH.

2. Experimental - Treatment of CBW and simultaneous recovery of its energetic potential (methane production) anaerobic assays were carried out to determine the gas potential and biodegradability of the substrate using a mesophilic anaerobic consortium, performed at different CBW concentrations of kg COD m⁻³. CBW was collected in one of the most representative cork stoppers companies in Portugal. The substrate was stored at 4°C until being used. Before using the substrate, pH was adjusted to 7.0-7.2 with NaOH. The tests were performed in triplicate and were incubated at 37° C. The methane accumulated in the vessels headspace was measured by gas chromatography.

3. Results and discussion - Anaerobic digestion is a promising technology and its application to the cork effluents has never been subject of research. Anaerobic assays are conducted under several operational conditions in order to evaluate the energetic potential of this waste. The results demonstrate that the effluent from cork boiling can be treated and valorised by anaerobic digestion. Almost half of the COD of CBW was converted into methane. The remaining fraction was not degraded by anaerobiosis and it might be due to the inhibition of the microbial consortium or to the presence of non/difficult biodegradable substances, wherein the latter is more likely to have occurred.

4. Conclusions -The treatment of CBW by anaerobic digestion is an interesting process as it additionally is an energetic valorisation of the substrate through biogas production which could be directly applied in the cork boiling process.

5. Referências

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