## **BOOK of ABSTRACTS**



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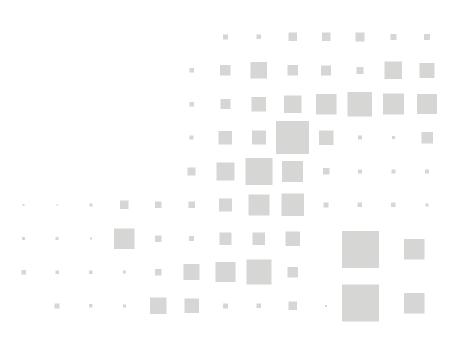
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# Sustainable Development, Chemical and Environmental Engineering



### SUPERCRITICAL CO<sub>2</sub> EXTRACTION OF TOBACCO WASTE

Marija Banožić<sup>1</sup>, Tanja Gagić<sup>2</sup>, Željko Knez<sup>2</sup>, Mojca Škerget<sup>2</sup>, Stela Jokić <sup>1</sup>

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Production and processing of tobacco is a constantly growing industry, which is developing new products and try to ensure high production efficiency. Nevertheless, a large amount of tobacco waste is produced, which is hazardous due to the high content of nicotine. Treatment of wastes such as recycling and reusing are an imperative today due to rigorous environmental protection legislation. Tobacco waste is consisted of leaf parts named tobacco scrap, very small particle named dust and midrib parts. Since they are derived from tobacco leaves, they contain all compound as leaves but in lower concentrations. Supercritical CO<sub>2</sub> extraction of bioactive components, including nicotine, is a new possibility of utilization such type of waste.

Tobacco waste (type: scrap) was obtained from "Fabrika Duhana Sarajevo" from Bosnia and Herzegovina. A series of operational parameters of supercritical CO<sub>2</sub> extraction of tobacco waste (pressure: 100–300 bar, temperature: 40–80°C), were investigated in a laboratory scale apparatus. CO<sub>2</sub> mass flow rate was kept constant during the process. The results show that the extraction yields were significantly affected by applied operational extraction parameters. The increase in pressure and temperature improved the extraction yield. Nicotine content in obtained extracts was analyzed using GC/MS.

Supercritical CO<sub>2</sub> extraction showed to be effective at two levels. Firstly, it can be used for production of selected high-valuable bioactive compounds, which can be implemented into new products. Secondly, after extraction of nicotine, tobacco waste becomes more suitable for some other application or disposal.

Keywords: Tobacco waste, scrap, supercritical fluid extraction, extraction yield

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