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# WET EXTRACTION OF BY-PRODUCT SAMPLES AND FRACTIONATION OF VALUABLE COMPOUNDS USING SUPERCRITICAL CO<sub>2</sub> EXTRACTION: AN INNOVATIVE APPROACH FOR SUSTAINABLE RESOURCE UTILIZATION

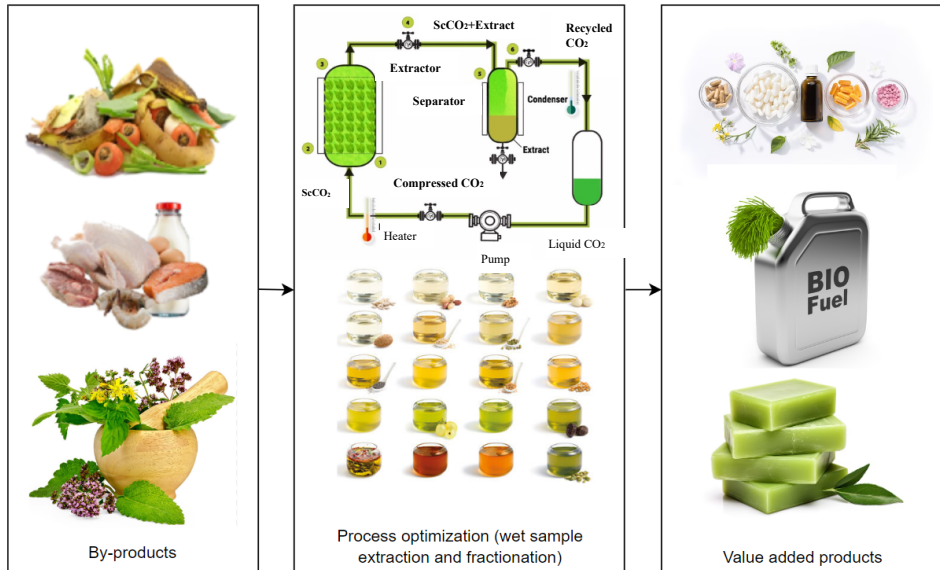
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**Abstract** – This research explores an innovative method for extracting and fractionating valuable compounds from byproduct samples through the utilization of supercritical carbon dioxide (SC-CO<sub>2</sub>) extraction. By-products generated from various industrial processes often contain untapped reservoirs of valuable compounds, necessitating environmentally sustainable and economically viable extraction techniques. SC-CO<sub>2</sub> extraction, known for its unique properties such as low toxicity, non-flammability, and tunable solubility, presents a promising avenue for efficient and selective extraction of target compounds. The study focuses on wet extraction, emphasizing the extraction of valuable compounds from by-products in their natural, moisture-laden state. This approach not only enhances the sustainability of the extraction process by minimizing pre-treatment steps but also broadens the scope of potential target compounds. The study further explores the critical parameters of SC-CO<sub>2</sub> extraction, including pressure, temperature, and flow rate, to optimize the extraction efficiency and selectivity for different classes of compounds.

**Keywords** – *By-products; fractionation; supercritical CO<sub>2</sub> extraction*



Optimizing supercritical CO<sub>2</sub> extraction.