

Extraction of Valuable Products from Rice Bran Using Non-Traditional Techniques

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Every year, about 40 million metric tons of rice bran is disposed of because of its tendency to become rancid. Rice bran contains nutritional components, such as proteins, fiber, antioxidants, and oil (18-22% by weight). Some of these components can be extracted and used to produce nutraceuticals, specialty chemicals, and/or fuels. The focus of this paper is the extraction of valuable bio-based products from rice bran via nontraditional extraction techniques. Extraction of rice bran oil was performed using liquid propane, and supercritical carbon dioxide (SC-CO₂). The effect of pressure and temperature on efficiency was investigated for both extraction techniques. To provide a basis for extraction efficiency, accelerated solvent extraction (ASE) with hexane was performed at 60 °C and 1500 psig. The effectiveness of each extraction method was based on % yield of oil, pounds of oil extracted per pound of extraction fluid, chemical composition of the extract, and separability of residual proteins from rice bran raffinate. An economic analysis was conducted to determine the cost effectiveness of the evaluated technologies.