World Academy of Science, Engineering and Technology
International Journal of Nutrition and Food Engineering
Vol:9, No:07, 2015

Extraction of M. paradisiaca L. Inflorescences Using Compressed Propane

Authors : Michele C. Mesomo, Madeline de Souza Correa, Roberta L. Kruger, Luis R. S. Kanda, Marcos L. Corazza

Abstract : Natural extracts of plants have been used for many years for different purposes and recently they have been screened for their potential use as alternative remedies and food preservatives. Inflorescences of M. paradisiaca L., also known as the heart of the banana, have great economic interest due to its fruit. All parts of the banana are used for many different purposes, including use in folk medicine. The use of extraction via supercritical technology has grown in recent years, though it is still necessary to obtain experimental information for the construction of industrial plants. This work reports the extraction of Musa paradisiaca L. using compressed propane as solvent. The effects of the supercritical extraction conditions, pressure and temperature on the yield were evaluated. The raw material, inflorescences banana, was dried at 313.15 K and milled. The particle size used for the packaging of the extraction cell was 12 mesh (23.5%), 16 mesh (23.5%), 32 mesh (34.5%), 48 mesh (18.5%). The extractions were performed in a laboratory scale unit at pressures of 3.0 MPa, 6.5 MPa and 10.0 MPa and at 308.15 K, 323.15 K and 338.15 K. The operating conditions tested achieved a maximum yield of 2.94 wt% for the CO2 extraction at 10.0 MPa and 338.15 K, higher pressure and temperature. The lower yield, 2.29 wt%, was obtained in the condition of lower pressure and higher temperature. Temperature presented significant and positive effect on the extraction yield with supercritical CO2, while pressure had no effect on the yield. The overall extraction curves showed typical behavior obtained for the supercritical extraction procedure and and reached a constant extraction rate of about 80 to 100 min. The largest amount of extract was obtained at the beginning of the process, within 10 to 60 min.

Keywords : banana, natural products, supercritical extraction, temperature
Conference Title : ICNFS 2015 : International Conference on Nutrition and Food Sciences
Conference Location : Zurich, Switzerland
Conference Dates : July 29-30, 2015