

Extraction of oil from rubber tree (*Hevea brasilienses*) seed shell using supercritical fluid

Matheus Vidal Bessa^{a*}; Francisco Eduardo Aragão Catunda^b; Fernando Luiz Pellegrini Pessoa^{c,d}; Marisa Fernandes Mendes^a

^a Department of Chemical Engineering, Technology Institute, Federal Rural University of Rio de Janeiro, Seropédica, Rio de Janeiro, Brazil.

^b Center of Exact, Natural and Technological Sciences, State University of the Tocantins Region of Maranhão, Imperatriz, Maranhão, Brazil.

^c Department of Chemical Engineering, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil.

^d Centro Universitário SENAI CIMATEC, Salvador, Bahia
*math_510@hotmail.com

The rubber tree (*Hevea brasilienses*) is a crop from amazon basin, which is known by its latex that can be extracted from its trunk. Because of this product, the rubber tree is harvested in different parts of the planet besides the amazon basin. Because of that, Southeast of Asia and Africa have more rubber trees than other countries. The latex is the main product from this tree, however there are byproducts that can be useful for industry purposes, and one of them is the rubber tree seed shell. Usually, it is used as adsorbent, but it still contains an amount of oil. In this point of view, the main purpose of this study is to extract the oil from the rubber tree seed shell using supercritical carbon dioxide. It was evaluated the influence of temperature and pressure on the extraction of rubber, verified through an experimental design how these two parameters influences on the time extraction and amount of oil extracted. The temperature varied between 40 and 60 °C, while the pressure from 200 to 500 bar. The experiments were done in an unit consisting in a high pressure pump, a thermostated bath that controls the temperature, an extractor with 42 mL of volume, and a micrometer valve for sampling. The kinetics were studied done the sampling at each 20 minutes. The results were compared to the conventional extraction method, soxhlet. It could be expected that the supercritical extraction was more selective than the soxhlet, and the composition of the oil from the shells is similar to the oil from the kernel, making possible the same uses in food and cosmetic industries.