



Study of the Effect Operational Parameters on the Supercritical Extraction Efficient Related to Sunflower Oil Seeds

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ARTICLE INFO

Article history:

Received 11 February 2020

Received in revised form 24 March 2020

Accepted 30 April 2020

Available online 4 May 2020

Keywords:

Extraction,
Super Critical Fluid,
Sunflower Seed,
Carbon Dioxide

ABSTRACT

Super critical extraction is a new method for separation of efficient processes and effective method for extracting a necessary foundation of solid or liquid material are suitable purity. Seed sunflower seed oil is the second one year after soy which is cultivated for its oil on the world. In this study, sunflower seed oil is extracted by liquid carbon dioxide in super critical conditions. Effects of temperature, pressure and grain size in the rate of extraction efficiency were the change in particle size among other parameters extraction efficiency. Because they have a role and the smaller the size, the efficiency is higher. Results proves is that temperature changes and pressure changes in comparison with particle size in the process of extraction efficiency was less effect because of reduced grain size increased 75 percent extraction efficiency. While the temperature increase of 16 percent and increasing pressure about 5 percent increase in extraction efficiency was observed.

1. Introduction

Oleic sunflower oil is liquid in the normal temperature environment, in the food industry and in health- cosmetic formulations compounds has many applications [1]. Sunflower oil most commonly compared to a vegetable oil is considered high-value. Because it has clear color, mild taste and a high proportion of Linoleic acids [2, 3]. Sunflower seeds are especially high in vitamin E and selenium. These function as antioxidants to protect your body's cells against free radical damage, which plays a role in several chronic diseases [4].

Decomposition of the characteristics of the road is a large amount of vitamin E [5].

Common fluid in the super critical extraction is carbon dioxide. This fluid is non-toxic and ineffective and the critical atmosphere conditions are 31°C and 72°C [6-9]. It is available easily and with high purity. Playback speed super critical fluid is higher than liquids and thus in comparison of a liquid solvent extraction; it makes the extraction faster [9-13]. Priority use of the super critical fluid as solvent extraction process due to

two very important property of permeability, high solubility fluid papers super critical influence and solid material by dissolving the soluble extract is in itself. Another benefit of extraction with super critical fluid is low operation temperature and the possibility of complete separation of the solvent extracted product by reducing the pressure [14, 15]

Many studies by researchers in the super critical extraction of oil seed plant are slightly different that can include canola oil, hazelnut, oil, and turmeric, oil hyacinth the said [16-19].

2. Materials and Methods

First raw sunflower seeds are prepared; then the seeds are separated from the skin form of the existing cabinets Dryer, (figure 1), the dry samples in the container are kept refrigerated until testing day. The dried samples should be changed of dried and milling to small particles has become. After that screen by the sieve sizes available with 0.5, 1, 1.5 and 2 mm sieve mesh, also by using carbon Dioxide (99.9%), nitrogen, ethyl alcohol (99.8%), Acetone to machine wash dishes and prepare new test, all the above mentioned materials

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