UNIVERSITI TEKNOLOGI MARA

MASS TRANSFER AND SOLUBILITY OF CORIANDER (Coriandrum sativum L.) SEED

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ABSTRACT

The experimental data was obtained from literature to be analyzed with the application of two correlation models which are Chrastil‟s model (CH) and Del Valle and Aguilera‟s model (DVA to estimate the solubility data. Coriander was extracted at temperature of 313, 328 and 343 K and operating pressure of 100, 150 and 200 bar in supercritical carbon dioxide (SC-CO2). Both solubility and density of solvent are closely related with each other. The results proved that as the density of SC-CO2 increased, the solubility of coriander increased but decreasing with temperature. It can be conclude that the relationship between the temperature and the solubility of coriander were not linear to each other. The modified model, DVA model it is expected have smaller value of AARD (%) that is 0.01 less then CH model. Smaller value of AARD indicates more satisfactory correlation and more accuracy of the correlation models to predict the solubility of coriander in SC-CO2.

Keywords: Coriander, Chrastil‟s Model, Del Valle and Aguilera‟s Model, Solubility, AARD, empirical correlation models

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF RESEARCH

Coriander (*Coriandrum sativum L.*) also known as cilantro or Chinese parsley. Coriander is a culinary and medicinal plant originating from the Mediterranean region, and is nowadays grown widely all over the world. The leaves are variously referred to as coriander leaves in Britain; cilantro in the United States, and „„yanshui" in China (Chen et al., 2011).

Coriander is a soft plant growing to 50 cm (20 in) tall. The leaves are variable in shape, broadly lobed at the base of the plant, and slender and feathery higher on the flowering stems. The oil and various extracts from Coriander have also shown the activities of antibacterial, anti-cancerous and anti-mutagenic (Chithra & Leelamma, 2000), antioxidant, and anti-diabetic (Gallagher, Flatt, Duffy, & Abdel Wahab, 2003). Thus, this plant displays a sufficient of biological activity and is generally used in folk medicine and the human diet, it is important to extend the study to preparative scale.