UNIVERSITI TEKNOLOGI MARA

KINETIC STUDY ON AQUILARIA MALACCENSIS LEAVES BY USING VACUUM FAR INFRARED DRYYER

MUHAMMAD NAQIB BIN AZIZAN

B.ENG. (HONS.) CHEMICAL

JAN 2018

ACKNOLEDGMENT

Firstly, I want to thank to God for giving me an opportunity for me to completing research project successfully. A special thanks to my supervisor Miss Habsah Binti Alwi for the knowledge and assistance throughout this research project.

My gratitude go to our coordinator Madam Siti Fatma Binti Abd Karim giving a talk about our research project and it easier to me to do the report. Thanks a lot to my group mates and classmates who also helped me during my research project by giving a little bit of guidance about the knowledge they have.

Lastly, I am thankful to all staffs of Chemical Engineering gives hand helped us in thorough our project well. Sincerely from my heart to thank also the assistant lab assisted in terms of labor in laboratory.

ABSTRACT

In this study, Far infrared drying behavior of Aquilaria Malaccensis leaves was investigated in advanced of vacuum pressure. The study was aimed to study the effect of VFIR drying in terms of changes of color, moisture content, drying curve and mathematical model. in addition, this would results in less energy conserved, less damaging drying process and contribute the originality of the product. The parameter of this experiment is set to be temperature of 40^{o}C, 50^{o}C and 60^{o}C under vacuum pressure of 5 bar with drying time of 120 minutes long. the drying data were fitted to 3 thin layer drying models. The performance of these models were compared using the determination of coefficient, R^2, reduced chi square, X^2 and root mean square error, RMSE between the experimental and predicted of moisture content. The mathematical model give a results of Page that the most suitable in analyzing drying curve of Aquilaria Malaccensis.

TABLE CONTENT

CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

Gaharu is a natural plant resin which accumulates in the plant species of four generation of the family. Aquilaria malaccensis is one 15 tree species of genus Aquilaria from family of the Thymelaeaceae, grows as high 40m and a diameter of 2.5m from rainforest found in Bangladesh, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore and Thailand. (Saikia, 2014) Malaccensis better known as agarwood and nicknames varied by countries. Agar wood is the rare and famous, resin-containing heartwood that is highly valuable and highly demand for its fragrance and medicinal values and used widely in many scope such as perfumery, medicinal and religious.

Figure 1.1:Aquilaria Malaccensis leaves