OPTIMISATION OF CHOLESTEROL REDUCTION IN PRAWN BY 'LIMAU MADU'(*CITRUS RETICULATA BLANCO)* FRUIT EXTRACT USING RESPONSE SURFACE METHODLOGY

NORDIANA BT KAMARUDIN

BACHELOR OF SCINCES (Hons.)
FOOD SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA

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ABSTRACT

OPTIMISATION OF CHOLESTEROL REDUCTION IN PRAWN BY'LIMAU MADU' FRUIT EXTRACT USING RESPONSE SURFACE METHODLOGY (RSM)

The purpose of this study was to investigate the usage of 'Limau madu' fruit extract on the reduction of cholesterol in prawn. 'Limau madu' fruit extract was diluted in the range of 100 to 14 %. By using Response Surface Methodology (RSM) of the MINITAB software version 14, experimental design could be created whereby test variables such as 'Limau madu' fruit extract concentration; temperature and time of immersion were used. Prawn was immersed in different 'Limau madu' extract concentrations and shaken in shaking water bath with temperature range from 32 to 45 ^{0}C, for immersion times ranging from 7 to 23 minutes. The treated prawns were analyses their cholesterol content using AOAC 994.10 method. The optimum reduction of cholesterol could be predicted and the reduction was 79.10% when the prawn was treated with 'Limau madu' fruit extract at the feasible optimum condition of 29 % 'Limau madu' fruit extract concentration, 28^{0}C of immersion temperature and 43 minutes of immersion time. Besides, the significant regression equation or model at the 5% level was created for the reduction of cholesterol in the prawn treated by 'Limau madu' fruit extract. It was also found that the reduction of cholesterol value of the optimum condition could be accepted because the difference values between the percentage reduction of cholesterol predicted by RSM of MINITAB software version 14 (79.12%) and verification experiment (84%) was not significantly different at the 5% level.

CHAPTER 1

INTRODUCTION

1.1 Background and problem statement

Time and again we are reminded that coronary heart disease is fast becoming the major cause of deaths from natural causes in Malaysia. Coronary heart disease (CAD) causes more than 4.5 million deaths in the developing world. Although it accounts for more than 35% of all certified deaths in Malaysian hospitals, awareness of the risk, especially among the young, is frighteningly low (Malaysia Society of Hypertension, 2006). CAD occurs when the arteries get clogged up, blocking blood flow to the heart, depriving it of oxygen. This causes ischaemic heart disease which can lead to a heart attack and even death.

The risk factors for these chronic diseases are mostly related to diet. Therefore, to prevent these diseases from occurring, we have to watch what we eat. Diet is the first steps to lower blood cholesterol and prevent coronary heart disease. Reducing dietary saturated fat intake is the most common means of reducing blood cholesterol. Even though drug treatments have been used extensively, but its have possible side effects,