

Screening of factors affecting the Vitamin B12 extraction from *Ulva lactuca* by 2-Level Factorial Design

Fatin Shazwani¹, Deny Susanti^{1*}, Normawaty Mohammad Nor², Muhamad Taher³, Nurul Iman Aminuddin¹

¹Department of Chemistry, Kulliyah of Science, International Islamic University Malaysia, 25200, Pahang, Malaysia

²Department of Marine Science, Kulliyah of Science, International Islamic University Malaysia, 25200, Pahang, Malaysia

³Department of Pharmaceutical Technology, Kulliyah of Pharmacy, International Islamic University Malaysia, 25200, Pahang, Malaysia

*Author for correspondence: deny@iium.edu.my

Introduction

Ulva lactuca exhibits many biological properties such as antimicrobial, antioxidant and antiviral due to the presence of bioactive compounds, like vitamins, polysaccharides and lipids. This study focuses on the extraction of vitamin B12 by boiling method from *U. lactuca* it is believed to be an alternative source for vitamin for those who are on a special diet or strict vegetarians.

Method

Sample collection and drying
(oven dry, freeze dry, sun dry, air dry)



2-Level Factorial experimental design by RSM



Vitamin B12 extraction at different parameters



Purification of vitamin B12 extracts



Qualitative and quantitative analysis by HPLC,
and statistical analysis

Result



Extract contained cyanocobalamin
(CNCbl), retention time at 1.924
minutes



Oven-dried boiled sample
exhibited the highest [CNCbl] which
was 0.021 mg/mL



Parameter that give a higher [CNCbl]
was at 25:75 % solvent:solvent, 3
g:60 mL solute:solvent, at pH 3

Conclusion

Vitamin B12 analogue that present in *U. lactuca* is CNCbl, with the highest amount was found in oven-dried boiled sample (0.0210 mg/mL).