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2. Saya ingin mengesahkan bahawa saya berpuashati dengan pembetulan/pindaan yang dilaksanakan oleh calon.

Sekian, terima kasih.

(Tandatangan dan cop)

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Tarikh

ENZYMATIC-TREATMENT AND DIFFERENT DRYING CONDITIONS ON GAC ARIL (*Momordica Cochinchinensis Spreng.*) POWDER

by

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A dissertation submitted in partial fulfilment of the requirements for the degree of Bachelor of Technology (B.Tech) in the field of Food Technology

School of Industrial Technology
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DECLARATION BY AUTHOR

This dissertation is composed of my original work and contains no material previously published or written by another person except where due reference has been made in the text. The content of my dissertation is the result of work I have carried out since the commencement of my research project and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution.

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LIST OF ABBREVIATIONS

Abbreviation / Symbol	Caption
FD	Freeze dried
HA40	Hot air dried at 40°C
HA60	Hot air dried at 60°C
ΔE	Total colour different
a_w	Water activity
AOAC	Association of Analytical Communities
WHC	Water holding capacity
WS	Water solubility
GAE	Gallic acid equivalent
QE	Quercetin equivalent
ANOVA	Analysis of variance
SPSS	Statistical Package for the Social Sciences
CIE	Commission internationale de l'éclairage
TCC	Total carotenoid content

RAWATAN ENZIMATIK DAN KEADAAN PENGERINGAN YANG BERBEZA TERHADAP SERBUK PULPA GAC (*MOMORDICA COCHINCHINENSIS SPRENG*)

ABSTRAK

Gac (*Momordica Cochinchinensis Spreng*) adalah buah berwarna oren-kemerahan, berbentuk oval dengan duri, dan mengandungi jumlah kandungan karotenoid yang tinggi. Tujuan kajian ini adalah untuk mengkaji kualiti serbuk pulpa gac yang dihasilkan menggunakan proses pengeringan berbeza. Rawatan dengan enzim pektinase dilakukan pada pulpa gac sebelum pengeringan dilakukan. Dua jenis keadaan pengeringan iaitu pengeringan udara panas pada suhu 40°C (HA40), 60°C (HA60), dan pengeringan pembekuan (FD) dilakukan untuk menghasilkan serbuk pulpa gac. Pengaruh parameter pengeringan terhadap kualiti serbuk pulpa gac yang dihasilkan adalah dengan analisis jumlah hasil pengeringan, pH, kandungan kelembapan, aktiviti air, kelarutan air, daya tahan air, jumlah kandungan karotenoid, dan jumlah perbezaan warna. Dari data yang diperoleh, serbuk pulpa gac FD menghasilkan jumlah hasil pengeringan yang lebih sedikit ($p<0.05$) dibandingkan dengan HA40 dan HA60. Kandungan kelembapan serbuk pulpa gac HA40 dan HA60 lebih rendah ($p<0.05$) berbanding serbuk pulpa gac FD. Namun, data tersebut berbeza dari segi aktiviti air. Kelarutan air HA40 dan HA60 lebih tinggi ($p<0.05$) berbanding dengan FD. Selain itu, FD mengekalkan beberapa komponen dari segi jumlah kandungan karotenoid, daya tahan air, dan warna dibandingkan dengan HA40 dan HA60. Serbuk pulpa gac FD memberikan jumlah kandungan karotenoid yang lebih tinggi ($p<0.05$) dan jumlah perbezaan warna yang lebih rendah ($p<0.05$) berbanding dengan HA40 dan HA60. Kesimpulannya, sampel FD memberikan rawatan pengeringan terbaik untuk menjaga kualiti serbuk pulpa gac yang dihasilkan.

ENZYMATIC-TREATMENT AND DIFFERENT DRYING CONDITIONS ON GAC ARIL (*MOMORDICA COCHINCHINENSIS SPRENG*) POWDER

ABSTRACT

Gac (*Momordica Cochinchinensis Spreng*) is an orange-reddish colour and ovally-shape fruit with spikes that mainly contain higher total carotenoid content. The aim of this study is to investigate the quality of gac aril powder produced upon different drying process. Treatment with pectinase enzyme was done on the fresh gac aril prior to drying treatment. Two type of drying conditions namely hot air drying at temperature 40°C (HA40) and 60°C (HA60), and freeze drying (FD) were carried out to produce gac aril powder. The effect of drying parameter on quality of gac aril powder produced were analyses in term of drying yield, pH, moisture content, water activity, water solubility, water holding capacity, total carotenoids content, and colour. From the results obtained, FD gac aril powder yield significantly lower ($p<0.05$) amount compared to HA40 and HA60 samples. Moisture content of HA40 and HA60 gac aril powders were significantly lower ($p<0.05$) compared to FD gac aril powder. However, the result was in contrast in term of water activity. HA40 and HA60 gac aril powders were also significantly higher ($p<0.05$) in term of water solubility compared to FD sample. Apart from that, FD gac aril powder preserved some components in term of total carotenoid content, water holding capacity, and colour compared to both hot air dried samples. FD gac aril powder give significantly higher ($p<0.05$) total carotenoid content and significantly lower ($p<0.05$) total colour different compared to HA40 and HA60. In conclusion, FD samples give the best drying treatment in order to preserve the quality of the gac aril powder produced.