

THE POTENTIAL SUGAR REPLACEMENT IN THE DEVELOPMENT OF LOW
CALORIE ROSELLE PICKLE

By
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ENDORSEMENT

The project report entitled **The Potential Sugar Replacement in the Development of Low Calorie Roselle Pickle** by **Mohamad Faez Bin Haji Adenan**, Matric No. **UK 17513** has been reviewed and corrections have been made according to the recommendations by examiners. This report is submitted to the Department of Food Science in partial fulfillment of the requirement of the Bachelor of Food Science (Food Technology), Faculty Agrotechnology and Food Science, Universiti Malaysia Terengganu.



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DECLARATION

I hereby declare that the work in this thesis is my own expect
for quotations and summaries which have been duly
acknowledged.

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ABSTRACT

This study was carried out to determine the effect of sweeteners xylitol, stevia (rebaudioside-A) and stevia blend (mixture of stevia, maltitol and sorbitol) as sugar replacement in the production of roselle pickle based on sensory evaluation (acceptance tests), physico-chemical properties and microbiological quality of the pickle. From the sensory evaluation test it showed that among all the sweeteners used, the formulation of roselle pickle using xylitol as a sugar substitute give the most accepted sweetener compared to stevia blend and stevia (rebaudioside-A). The value of L *, a * and b* for the colour of roselle pickle were different for formulations containing sweeteners compared to roselle pickle containing sugar (control). Roselle pickle with xylitol showed higher in total soluble solids than from the roselle pickle with stevia blend and stevia (rebaudioside-A). Total calories in roselle pickle that were formulated with sweeteners gave more than 3 times less calories than roselle pickle with sugar (control). From this study, the pH value, texture, ash, crude fiber, ascorbic acid and anthocyanin contents of roselle pickles prepared using these three sweeteners showed no significant different ($p < 0.05$). The microbiological quality done also showed that there were no detected growth of microorganisms for the “aerobic plate count”, “total coliform”, “yeast and mould count”, “*stapyllococcus aureus* count” and “lactic acid bacteria count”.

ABSTRAK

Kajian ini telah dijalankan bertujuan untuk menentukan kesan penggunaan pemanis xylitol, stevia (rebaudioside-A) dan stevia campuran (campuran stevia, maltitol dan sorbitol) sebagai pengganti gula dalam penghasilan jeruk rosell, terhadap penilaian deria (ujian penerimaan), sifat fiziko-kimia dan kualiti mikrobiologi. Hasil ujian penilaian deria, menunjukkan bahawa di antara semua formulasi jeruk rosell menggunakan pemanis menunjukkan xylitol sebagai pengganti gula yang paling diterima berbanding dengan stevia campuran dan stevia (rebaudioside-A). Nilai L^* , a^* dan b^* untuk warna jeruk rosell berbeza bagi formulasi yang mengandungi pemanis berbanding jeruk rosell yang mengandungi gula (kawalan). Jeruk rosell mengandungi xylitol menunjukkan jumlah pepejal larut yang lebih tinggi berbanding daripada jeruk rosell dengan stevia campuran dan stevia (rebaudioside-A). Jumlah kalori dalam jeruk rosell yang telah diformulasikan dengan pemanis memberikan lebih 3 kali kurang kalori daripada jeruk rosell yang mengandungi gula (kawalan). Daripada kajian ini, nilai pH, tekstur, abu, serat kasar, asid askorbik dan kandungan antosianin jeruk rosell yang disediakan dengan menggunakan tiga pemanis ini menunjukkan tiada perbezaan yang ketara/nyata ($p < 0.05$). Bagi analisis kualiti mikrobiologi menunjukkan tiada pertumbuhan mikroorganisma yang dikesan dalam ujian “kiraan plat aerobik”, “jumlah koliform”, “kiraan yis dan kulat”, “kiraan *staphylococcus aureus*” dan “kiraan bakteria asid laktik”.