

EFFECT OF TREHALOSE IN FROZEN APAM TEPUNG BERAS

**By
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The requirements for the degree of
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ENDORSEMENT

The project report entitle **Effect of trehalose in frozen apam tepung beras** by **Wan Norsyawani bt Wan Adnan**, Matric No. **UK 17335** 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 fulfilment of the requirement of the degree of Food Science (Food Technology), Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.



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DECLARATION

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

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ABSTRACT

The aim of this work is to study the effect of trehalose in the production of frozen *apam tepung beras* and to determine the shelf life and the quality change of *apam tepung beras* in frozen method. Different levels of trehalose (20%, 50%, 70% and 100%) were incorporated in frozen *apam tepung beras*, and their quality changes such as specific volume, color, moisture content and texture characteristics (hardness and springiness) were examined during 60 days frozen storage. The analysis had been checked every 15 days (15, 30, 45 and 60 days). For specific volume at day zero until day 60 showed the highest value of specific value which was 1.71 ± 0.01 ml/g to 1.64 ± 0.01 . For color and texture characteristics result also showed the highest value was sample with 100% of trehalose. For moisture content result, samples that contained 100% of trehalose showed the lowest value of moisture content for the zero day which was 9.76, followed by another days storage it decrease slowly with the increase day of storage which were 9.65, 9.60, 8.54 and 8.2230 untrained panel consists of graduate students from University Malaysia Terengganu (UMT) had been done for sensory evaluation. Sensory evaluation showed that, at day 60 sample with 100% of trehalose as an overall acceptance which was 4.53 ± 0.82 . The cryoprotective effect of trehalose during freezing was confirmed, and it was found proportional to its levels. Trehalose can improve and maintain samples behaviour under freezing condition in terms of volume and texture characteristics.

ABSTRAK

Tujuan kajian ini adalah untuk mengkaji kesan dan peranan trehalose dalam pembuatan kuih apam tepung beras secara sejuk beku. Selain itu kajian ini juga dijalankan untuk menentukan jangka hayat dan perubahan kualiti semasa proses penyejukan beku apam tepung beras. Sampel dinilai dengan membezakan kandungan trehalose (20%, 50%, 70% dan 100%). Perubahan kualiti seperti isipadu pengembangan, warna, kandungan kelembapan dan tekstur (kekerasan dan daya melenting) di periksa sepanjang 60 hari tempoh penyimpanan secara sejuk beku. Analisis telah di periksa setiap 15 hari (15, 30, 45, 60 hari). Bagi isipadu pengembangan pada hari pertama sehingga hari ke 60 menunjukkan nilai tertinggi iaitu 1.71 ± 0.01 sehingga 1.64 ± 0.01 . Untuk ujian perubahan warna dan tekstur juga menunjukkan sampel yang mengandungi 100% trehalose mempunyai nilai tertinggi. Untuk ujian kandungan kelembapan, pada hari pertama menunjukkan sampel yang mengandungi 100% trehalose mempunyai nilai terendah iaitu 9.76. 30 panel yang tidak terlatih terdiri daripada pelajar-pelajar siswazah dari Universiti Malaysia Terengganu (UMT) telah dipilih untuk melakukan ujian penilaian deria. Penilaian deria menunjukkan pada hari ke 60, sample yang mengandungi 100% trehalose sebagai nilai tertinggi iaitu 4.53 ± 0.82 . Kesan trehalose semasa proses pembekuan dapat dikenal pasti dan berkadar langsung dengan tahap kandungan trehalose di dalam setiap sample. Trehalose boleh membaiki dan mengekalkan ciri-ciri tekstur semasa proses pembekuan.