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Reconstitute -ability of dried glutinous rice balls (starch based product) dried using different drying methods / Goh Hua Choong.

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RECONSTITUTE-ABILITY OF DRIED GLUTINOUS RICE BALLS (STARCH BASED PRODUCT) DRIED USING DIFFERENT DRYING METHODS

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(Food Service and Nutrition)

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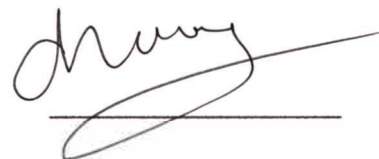
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DECLARATION

I hereby declare that this research project is based on my original work except for quotations and summaries which have been duly acknowledged.

3rd May 2006   GOH HUA CHOONG

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ABSTRACT

In this study, the reconstitute-ability of dried glutinous rice balls (starch based product) dried using different drying methods were evaluated. Three treatments were used namely air-oven drying, vacuum drying and freeze drying. The results were then compared to the blast frozen glutinous rice balls. The samples were tested for colour, appearance, firmness, springiness, stickiness, moisture content, protein content and panel acceptability. Results showed that freeze dried samples had the lightest colour with 97.22±0.19 'L' value. Besides that, vacuum dried samples showed the highest value of redness 'a', 0.40±0.11, while the air-oven dried samples had the highest degree of yellowness with the 'b' of 2.37±0.35. Freeze drying showed no effect on the appearance of reconstituted glutinous rice balls but shrinkage occurred in air-oven dried samples while vacuum dried samples were inflated double of its original size. The results also showed that air-oven dried samples gave the highest mean value in firmness, 81.30±9.96g. On the other hand, vacuum dried samples recorded as a most springiness samples with mean value of 39.27±3.40g. However, air-oven drying yielded the samples with the stickiest products with mean value, -35.26±7.48g. High moisture content was found in reconstituted air-oven dried samples with 46.17±2.99% but the freeze dried samples showed the greatest ability in water absorption among the samples, about 16% of moisture absorbed by the reconstituted freeze dried samples. Protein content in freeze dried samples were significantly higher as compared to other samples. Furthermore, air-oven dried samples considered as the most accepted samples by the panels after collected the high score in attributes such as colour, firmness, springiness, stickiness, chewiness and overall acceptance in sensory test. Based on the phsico-chemical analysis, freeze drying yielded the best glutinous rice balls with the great colour, appearance, texture, and high moisture content. However, air-oven dried samples showed the best overall acceptance by the panels. In general, blast freezing still considered as the best preservation method to produce a good quality product if compared with other drying treatments.

KEUPAYAAN MEMBENTUK SEMULA BEBOLA TEPUNG PULUT (PRODUK BERASASKAN KANJI) DIKERINGKAN DENGAN MENGGUNAKAN CARA PENGERINGAN YANG BERBEZA

ABSTRAK

Dalam kajian ini, keupayaan membentuk semula bebola tepung pulut (produk berasaskan kanji) yang dikeringkan dengan menggunakan cara pengeringan yang berbeza telah dijalankan. Tiga proses pengeringan telah digunakan iaitu pengeringan oven-udara, pengeringan vakum dan pengeringan dingin-beku. Keputusan telah dibandingkan dengan bebola tepung pulut yang didingin-beku cepat. Sampel telah diuji warnanya, permukaan, kekerasan, kekenyalan, kelikitan, kandungan kelembapan, kandungan protein dan penerimaaan panel. Keputusan menunjukkan sample yang didingin-beku mempunyai warna yang paling terang, dengan 97.22±0.19 nilai 'L'. Selain itu, sampel yang dikering dengan vakum menunjukkan warna kemerahan 'a' yang tertinggi iaitu, 0.40±0.11, manakala sampel yang dikering dengan oven-udara mempunyai warna kekuningan 'b' yang tertinggi iaitu 2.37±0.35. Pengeringan dingin-beku tidak mempengaruhi permukaan sampel yang telah dibentuk semula tetapi pengecutan berlaku pada sampel yang dikering dengan oven-udara manakala sampel yang dikering dengan vakum telah mengembang dua kali ganda saiz asalnya. Keputusan juga menunjukkan sampel yang dikeringkan dengan oven-udara mempunyai nilai kekerasan yang tertinggi iaitu 81.30±9.96g. Sementara itu, sampel yang dikeringkan dengan vakum tercatat sebagai sampel yang paling kenyal dengan nilai min, 39.27±3.40g. Pengeringan oven juga telah menghasilkan sampel yang paling melikit dengan nilai min, -35.26±7.48g. Di samping itu, kandungan kelembapan yang tertinggi telah dijumpai pada sampel oven-udara yang telah dibentuk semula dengan 46.17±2.99% tetapi sampel yang didingin-beku telah menunjukkan keupayaan penyerapan yang paling baik antara semua sampel, kira-kira 16% kelembapan telah diserap oleh sampel dingin-beku yang telah dibentuk semula. Sementara itu, sampel yang dikeringkan dengan oven-udara dianggap sebagai sampel yang paling diterima oleh panel selepas mengutip markah yang tinggi dalam atribut seperti warna, kekerasan, kekenyalan, kelekatan, pengunyahan dan penerimaan keseluruhan dalam ujian sensori. Berdasarkan analisis fiziko-kimia, pengeringan dingin-beku telah menghasilkan bebola tepung pulut yang terbaik dengan warna, permukaan, tekstur yang baik, dan kandungan kelembapan yang tinggi. Tetapi, sampel yang dikeringkan dengan oven menunjukkan penerimaan keseluruhan yang terbaik oleh panel. Biasanya, dingin-beku cepat masih dianggap sebagai cara pengawetan terbaik untuk menghasilkan satu produk yang berkualiti tinggi jika dibandingkan dengan cara pengeringan yang lain.