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Development of natural seasoning from lemon grass
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DEVELOPMENT OF NATURAL SEASONING FROM LEMON GRASS
(*Cymbopogon citratus*)

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Degree of Bachelor of Food Science
(Food Service and Nutrition)

FACULTY OF AGROTECNOLOGY AND FOOD SCIENCE
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DECLARATION

I hereby declare that this research project is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any degree at UMT or other institutions.

28th June 2007

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ABSTRACT

The effect of the methods of drying on physical and chemical properties of dried lemon grass was studied for three different methods of drying: air oven, vacuum and freeze drying. The sensory acceptance of dried lemon grass with different drying methods was investigated. Colour characteristics were studied by measuring lightness (L), redness (a) and yellowness (b) using Minolta Chroma CR 300 colorimeter. In chemical analysis, determination of protein content was done by using the Kjeldahl method while fat content was determined by using Soxtec 2055 extraction unit manual and control unit manual system whereas determination of fiber content was conducted by using Fibertec 2021 FiberCap System. Descriptive sensory analysis was conducted to describe and differentiate dried lemon grass prepared by different drying treatment compared to reference sample (fresh lemon grass). A total of 6 attributes were generated by 8 female trained panelists to describe and evaluate the fresh and dried samples. The drying methods were found to significantly affect the three colour parameter. The colour lightness and redness of dried lemon grass were increasing compared to fresh lemon grass. Vacuum dried lemon grass had low L parameter and increase of a and b parameter. While, freeze dried lemon grass had slightly high in lightness and a and b increased slightly. Freeze drying seems to prevent colour changes resulting improved colour characteristics. Some dried lemon grass with different drying methods showed significant effect on the moisture, ash, protein, fat, fiber and carbohydrate. The moisture content of finished samples ranged from 8.94-16.90%. Low moisture content on freeze drying might due to the drying at low temperature. Freeze dried lemon grass showed higher on ash, protein, fat and carbohydrate than air oven and vacuum drying. The fat and fiber content ranged from 0.01-0.02% and 21.14-24.81%, respectively. Both values of fat and fiber may not be affected by drying methods. The protein content of different drying treatments was between 2.86% and 4.34%. Vacuum and air oven dried lemon grass had the low protein content. The high temperature of air oven and vacuum drying which were 60°C and 50°C had effected on the protein content of lemon grass. High temperature and long drying time degrades the quality of samples. Samples showed significant differences ($p < 0.05$) in all the sensory attributes except for greenness. The drying methods of dried samples have a strong influence on the sensory characteristics of lemon grass. The retention of aroma and colour in freeze dried sample was higher than in the air oven and vacuum dried samples. Freeze drying produce good quality dried lemon grass in terms of aroma and colour.

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PEMBANGUNAN BAHAN PERASA DARIPADA SERAI MAKAN
(Cymbopogon citratus)

ABSTRAK

Kesan daripada kaedah pengeringan pada ciri-ciri fizikal dan kimia serai kering dikaji untuk tiga kaedah pengeringan yang berbeza seperti pengeringan oven, vakum dan sejukbeku. Penerimaan sensori pada serai kering dengan kaedah pengeringan yang berbeza diselidik. Ciri-ciri warna dikaji dengan mengukur parameter keterangan (L), kemerahan (a) dan kekuningan (b) dengan menggunakan Minolta Chroma CR 300 colorimeter. Dalam analisis kimia, penentuan kandungan protein menggunakan kaedah Kjeldahl manakala kandungan lemak ditentukan dengan menggunakan Soxtec 2055 extraction unit manual dan control unit manual system dan penentuan kandungan serat menggunakan Fibertec 2021 FiberCap System. Ujian Analisis Diskriptif Kuantitatif (QDA) dilakukan untuk menerangkan dan membezakan serai kering yang disediakan dengan pengeringan yang berbeza berbanding dengan sampel rujukan (serai segar). Terdapat 6 atribut yang dijana oleh 8 orang panel perempuan yang berpengalaman untuk menerangkan dan menilai sampel segar dan sampel kering. Kaedah pengeringan menunjukkan kesan signifikan pada ketiga-tiga parameter warna. Keterangan and kemerahan warna serai kering meningkat berbanding dengan serai segar. Serai kering vakum menunjukkan parameter L yang rendah dan peningkatan pada parameter a dan b. Manakala, serai kering sejukbeku sedikit tinggi pada parameter keterangan dan peningkatan yang sedikit pada parameter a dan b. Pengeringan sejukbeku seolah-olah dapat mengelakkan perubahan warna yang dapat meningkatkan ciri-ciri warna. Sesetengah serai yang dikeringkan dengan kaedah yang berlainan menunjukkan kesan signifikan pada kelembapan, abu, protein, lemak, serat dan karbohidrat. Kandungan kelembapan sampel akhir lingkungan dari 8.94-16.90%. Kandungan lembapan yang rendah pada pengeringan sejukbeku mungkin disebabkan oleh pengeringan pada suhu yang rendah. Serai kering sejukbeku menunjukkan nilai yang tinggi pada abu, protein, lemak dan karbohidrat berbanding dengan pengeringan oven dan vakum. Kandungan lemak dan serat masing-masing berada dalam lingkungan dari 0.01-0.02% dan 21.14-24.81%. Kedua-dua nilai lemak dan serat hanya terdapat sedikit perbezaan yang mungkin disebabkan pengeringan tidak memberi apa-apa kesan. Kandungan protein daripada pengeringan yang berbeza di antara 2.86% dan 4.34%. Serai kering vakum dan oven mempunyai kandungan protein yang rendah. Suhu tinggi pada oven dan vakum iaitu 60°C dan 50°C yang memberi kesan pada kandungan protein serai. Suhu tinggi dan masa pengeringan yang panjang menurunkan kualiti sampel. Sampel menunjukkan perbezaan signifikan ($p<0.05$) pada semua atribut kecuali kehijauan. Kaedah pengeringan sampel kering mempunyai pengaruh yang kuat pada ciri-ciri sensori serai. Rentensi aroma dan warna pada sampel kering sejukbeku adalah tinggi berbanding dengan sampel kering oven dan vakum. Pengeringan sejukbeku menghasilkan kualiti yang baik pada aroma dan warna serai kering.