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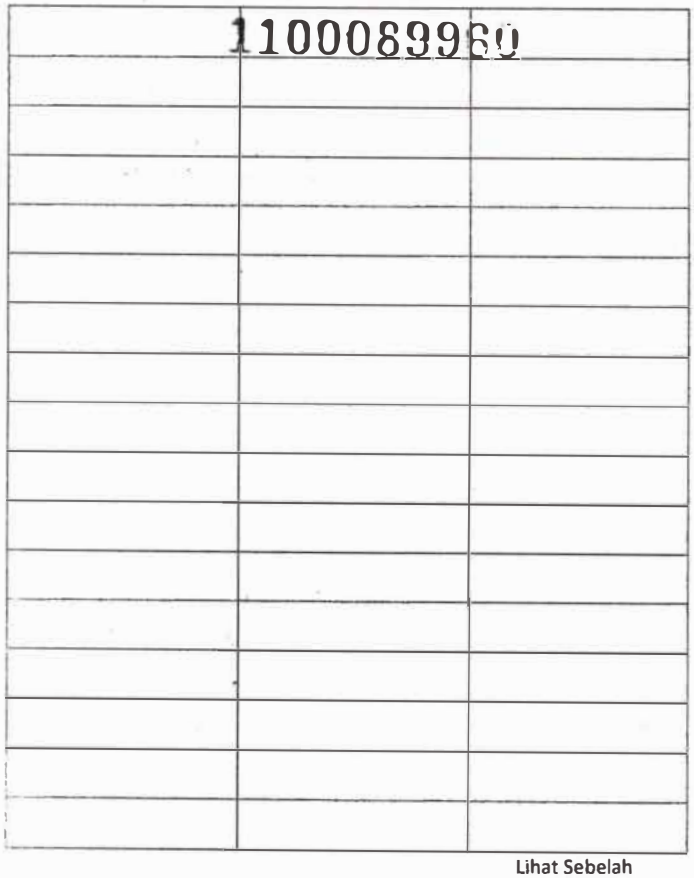


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# RECOVERY STUDY ON B-CAROTENE, ASCORBIC ACID AND MINERAL CONTENT OF SELECTED VEGETABLES BY UNDERGOING DIFFERENT DRYING PROCESS

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MENGABANG TELIPOT

2006

# RECOVERY STUDY ON B-CAROTENE, ASCORBIC ACID AND MINERAL CONTENT OF SELECTED VEGETABLES BY UNDERGOING DIFFERENT DRYING PROCESS

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**RESEARCH PROJECT submitted in partial fulfillment of the requirements for the Degree of Bachelor of Food Science**
**(Food Service and Nutrition)**

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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 in acknowledged.

**3rd May 2006**

**GOH YEE MUN**
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**3rd May 2006**

**Approved by,**

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-GOH YEE MUN-

## ABSTRACT

In instant food industry, vegetables usually dried prior to its use and this processing factor would influence the content of most of the antioxidant, namely ascorbic acid, carotenoids and phenolic compounds. Therefore, identification of the best drying technique in order to minimize lost of the nutritional values was important. In this study, the effects of air-oven drying and freeze drying on degradation of β-carotene and ascorbic acid was investigated and compared in order to determine the most suitable drying technique. Carotenoid in selected vegetables were determined by high-performance liquid chromatography (HPLC) and ascorbic acid by the official method of Association of Official Analytical Chemists (AOAC) and mineral (Na, Ca, K, Fe) analysis method to identify mineral was atomic absorption spectrophometry. The results showed that freeze drying led to less degradation of β-carotene in selected vegetables compared air-oven drying. Whereas, air-oven drying led to less degradation of ascorbic acid in selected vegetables compared to that of freeze drying. β-carotene degradation in the selected vegetables were depended more on the temperature than moisture content. In contrast, ascorbic acid was highly depended on moisture content. In general, mineral have no consistent difference between the grouped vegetables. In conclusion, controlled of moisture content when freeze drying or temperature in air-oven drying antioxidant properties could improved.

# KAJIAN PEMULIHAN ß-CAROTENA, ASID ASKORBIK DAN KANDUNGAN MINERAL DALAM SAYURAN TERPILIH ATAS MENJALANI PELBAGAI PROSES PENGERINGAN

## ABSTRAK

Dalam industri makanan terutama industri yang menghasilkan makanan segera biasanya sayuran dikeringkan untuk menghasilkan product. Pemprosesan ini menpengaruhi isi kandungan antioxidant dalam sayuran yang biasa dikenali sebagai asid askorbik, carotenoids dan kompoun fenolik. Dengan itu, mengenal pasti cara pengeringan terbaik adalah amat penting supaya dapat mengurangkan kehilangan nutrient dalam pemprosesan terutama dalam proses pengeringan. Dalam kajian ini, kesan terhadap kehilangan isi kandungan asid ascorbic dan β-carotene dengan penggunaan "air-oven drying" dan "freeze drying" dijalankan secara experimen dan bandingan antara teknik pengeringan supaya dapat menentukan teknik pengeringan yang paling sesuai. Carotenoid dalam sampel adalah ditentukan dengan penggunaan cara *high-performance liquid chromatography (HPLC)* and asid askorbik adalah ditentukan melalui *(AOAC).* Manakala, mineral ditentukan melalui atomic absorption spectrophometry. Keputusan menunjukkan "freeze drying" menyebabkan kurang kehilangan β-carotene dalam sample jika dibanding dengan "air-oven drying". Dalam kes asid askorbik, "feeze drying" menyebabkan kehilangan asid askorbik yang banyak jika dibanding dengan "air-oven drying . Kehilangan β-carotene dalam sample adalah lebih bergantung kepada faktor suhu daripada kelembapan. Sebaliknya, asid askorbik adalah amat bergantung kepada

kelembapan. Secara umumnya, perbezaan mineral adalah tidak konsistent antara samples. Dengan kesimpulannya, kawalan kelembapan semasa "freeze drying" dan suhu semasa "air-oven drying" adalah dapat mengurangkan kadar kehilangan bahan antioksidan.