ANTIOXIDATIVE COMPOUNDS OF DIFFERENT COLOURED BELL PEPPERS, *Capsicum annuum L.*

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ANTIOXIDATIVE COMPOUNDS OF DIFFERENT COLOURED BELL PEPPERS, *Capsicum annuum* L.

By
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **ANTIOXIDATIVE COMPOUNDS OF DIFFERENT COLOURED BELL PEPPERS, *Capsicum annuum* L.** oleh **AZLIANA BINTI ABU BAKAR SAJAK**, No. matrik: **UK12109** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah **SARJANA MUDA SAINS (SAINS BIOLOGI)**, Fakulti Sains dan Teknologi, UMT.

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DECLARATION

I hereby declare that this thesis entitled "Antioxidative Compounds of Different Coloured Bell Peppers, *Capsicum annuum* L." is the result of my own research except as cited in the references.

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ABSTRACT

Fruits and vegetables have conferred themselves as functional foods. Besides fulfilling our needs, they have provided us with health benefits. Nutritional studies have indicated that high consumption of fruits and vegetables can supply human body with essential dietary antioxidant. Bell pepper (*Capsicum annuum* L.) is a vegetable known for its rich antioxidant content. However, little study being carried out comparing fresh and commercially available samples of different coloured bell pepper. Thus, this study are mainly concerned on antioxidative constituents and comparing their level in fresh and commercially available sample of *Capsicum annuum* L. The concentrations of antioxidative constituents i.e. α-tocopherol, ascorbic acid and carotenoid content as well as catalase (CAT), peroxidase (POD) and ascorbate peroxidase (APX) specific activities were studied in the different coloured bell peppers (green, yellow and red bell peppers) in fresh and commercially available samples. In fresh and commercially available samples, yellow bell peppers contained significantly ($p<0.05$) higher concentration of carotenoid, ascorbic acid and α-tocopherol compared to other bell peppers. However, no significant ($p>0.05$) differences were observed in the APX, CAT and POD specific activities. In comparison, the concentration of carotenoid, ascorbic acid and α-tocopherol were significantly ($p<0.05$) higher in fresh samples compared to commercially available samples especially in green bell peppers. Results indicated that yellow bell peppers are a good source of dietary antioxidants compared to other bell peppers while fresh green peppers are better in antioxidative compounds compared to commercially green peppers.

ABSTRAK

Buah-buahan dan sayur-sayuran telah dikenali sebagai makanan dwifungsi. Di samping memenuhi keperluan nutrisi, buah-buahan dan sayuran membawa kebaikan dari segi kesihatan. Kajian nutrisi telah membuktikan bahawa pengambilan buah-buahan dan sayuran yang tinggi boleh memenuhi diet antioksidan yang diperlukan. *Capsicum* merupakan antara sayuran yang kaya dengan antioksidan. Walaubagaimanapun, hanya sedikit kajian telah dilakukan untuk membandingkan kandungan antioksidan *Capsicum* segar dan komersil. Justeru, kajian dilakukan bagi menentukan kandungan antioksidan dan membandingkan tahap kandungan antioksidan di dalam buah *Capsicum* segar dan komersil. Nilai kandungan antioksidan seperti α-tokoferol, asid ascorbik, karotenoid dan aktiviti spesifik enzim katalase (CAT), peroksidase (POD) dan askorbat peroksidase (APX) telah di kaji di dalam buah *Capsicum* yang berbeza warnanya (hijau, kuning dan merah) untuk sampel segar dan sampel komersil. Keputusan menunjukkan *Capsicum* kuning daripada sampel segar dan sampel komersil, masing-masing mempunyai kandungan antioksidan karotenoid, asid askorbik dan α-tokoferol yang tinggi ($p<0.05$). Namun begitu, tiada perbezaan secara signifikan ($p>0.05$) didapati pada aktiviti spesifik enzim APX, CAT dan POD. Perbandingan antara sampel menunjukkan sampel segar mempunyai kandungan antioksidan karotenoid, asid askorbik dan α-tokoferol yang lebih tinggi ($p<0.05$) berbanding sampel komersil, terutamanya di dalam *Capsicum* hijau. Secara keseluruhannya, *Capsicum* kuning merupakan sumber diet antioksidan yang baik berbanding *Capsicum* yang lain dan *Capsicum* hijau segar mengandungi kandungan antioksidan yang baik berbanding *Capsicum* hijau komersil.