EXTRACTION OF BETALAINS FROM BETA VULGARIS METHOD COMPARISON

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ABSTRACT

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The aim of this study was to extract natural pigment which is betalain in *Beta vulgaris* using different extraction methods. The different extraction methods used were 100% superheated water (80^0C), acidified superheated water (80^0C), acidified methanol and boiling with water (100^0C). The maximum absorbance of betalain pigments were observed at λ max of 535nm and 480nm using Uv-Vis Spectrometer. These λ max of 535nm and 480nm show the presence of betacyanins and betaxanthins pigments. The extraction methods were compared using Uv-Vis at λ max 535nm. The studies show that natural pigment in *Beta vulgaris* can be extracted using all these methods. However, these extraction methods gave different maximum absorbance and λ max. 100% superheated water at 80^0C gave absorbance of 0.2070 at λ max of 533.52nm with concentration of 7.39ppm. Acidified superheated water at 80^0C gave absorbance of 0.2625 at λ max of 535.50nm with concentration of 9.37ppm. Acidified methanol (HCl) gave absorbance of 0.2108 at λ max of 532.06nm with concentration of 7.53ppm. Boiling with water at 100^0C gave absorbance of 0.18906 at λ max of 532.06nm with concentration of 6.75ppm. From the results, the best extraction method was observed when the natural pigment was extracted using acidified superheated water at 80^0C as compared to other extraction methods.

ABSTRAK

PENGEKSTRAKKAN BETALAINS DARIPADA *BETA VULGARIS* PERBANDINGAN KAEDAH

Tujuan kajian ini adalah untuk mengekstrak pigmen semulajadi iaitu betalain di dalam *Beta vulgaris* menggunakan kaedah pengekstrakan yang berbeza iaitu dengan 100% air pemanasan lampau (80^0C), air pemanas lampau yang berasid (80^0C), methanol berasid dan pemanasan dengan air suling (100^0C). Penyerapan maksima pigmen betalain telah dicatat dengan λ max 535nm dan 480nm menggunakan Uv-Vis Spectrometer. λ max 535nm dan 480nm menunjukkan kehadiran pigmen betacyanins and betaxanthins. Kaedah ektrak dibandingkan menggunakan Uv-Vis spectrometer dengan λ max 535nm. Kajian ini menunjukkan semua kaedah pengekstrakan yang telah disebut boleh mengektrak pigmen semulajadi di dalam *Beta vulgaris*. Walau bagaimanapun, setiap kaedah pengektrakan memberikan penyerapan maksima dan λ max yang berbeza. 100% pemanasan air lampau dengan suhu 80^0C memberikan penyerapan maksima dengan 0.2070 dan λ max 0.533.52nm dengan kepekatan 7.39ppm. Air pemanasan lampau berasid dengan suhu 80^0C memberikan penyerapan maksima 0.2625 pada λ maksima 535.50nm dengan kepekatan 9.37ppm. Methanol berasid memberikan penyerapan maksima 0.2108 pada λ maksima 0.532.06nm dengan kepekatan 7.53ppm. Pemanasan air suling dengan suhu 100^0C memberikan penyerapan maksima 0.18906 pada λ max 532.06nm dengan kepekatan 6.75ppm. Daripada keputusan ini, kaedah pengekstrakan yang terbaik adalah apabila pigmen semulajadi diekstrak menggunakan air pemanasan melampau berasid dengan suhu 80^0C berbanding dengan kaedah pengektrakan yang lain.

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