Anthocyanin recovery from mangosteen (Garcinia mangostana L.) hull using lime juice acidified aqueous methanol solvent extraction

ABSTRACT

The recovery of anthocyanin from mangosteen (Garcinia mangostana L.) hull was investigated using an aqueous methanol solvent acidified by Mexican lime (Citrus aurantifolia Swingle) juice in comparison with the conventional HCl acidified methanol solvent. The addition of 0.20 mL lime juice/mL to an aqueous methanol extraction solvent gave a maximum total monomeric anthocyanin (TMA) recovery of 4.742 ± 0.590 mg cy-3-glu/g hull powder compared to 2.950 ± 0.265 when using an HCl acidified extraction solvent at 0.20%. This acidified aqueous methanol extraction solvent using lime juice produced an increase of 60.75% anthocyanin which suggests that this natural lime juice can be a good acidifying agent. The quantity of lime juice or HCl added to the extraction solvent was found to be a more important factor than its pH value in influencing TMA yield. A lower particle size of hull powder of 250 μm to 500 μm was also found to give the highest recovery of anthocyanin (p < 0.05).

Keyword: Garcinia mangostana L.; Extraction; Citrus aurantifolia Swingle; Particle size; Total monomeric anthocyanin; Hydrogen bond formation