

Optimization of total anthocyanidins quantification using HPLC and selection of suitable cultivars for purple tea production

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Optimization of a protocol to extract anthocyanins and to quantify anthocyanidins present in five selected standard tea cultivars established in Tea Research Institute, *Talawakelle*, Sri Lanka, using HPLC was carried out in this study. The main aim of the present study was to evaluate the potential of tea cultivars to produce purple tea. The quantification of anthocyanidins were carried out in the fresh leaf and in processed tea samples of the five standard cultivars. The anthocyanins were extracted using acidified methanol/HCl (99:1 v/v) as the extractant. The extracted anthocyanins were further purified using C18 solid phase extraction cartridges followed by immediate acid hydrolysis using 2N HCl. Characterization of anthocyanidins were done using HPLC, and they were identified based on the retention times and the order of elution compared to the four anthocyanidin standards used in the study. Malvidin chloride was not detected in any of the five cultivars. Delphinidin chloride and cyanidin chloride were detected in all five cultivars, but pelargonidin chloride was detected only in TRI 26 and TRI 2043 cultivars. The highest anthocyanidin content, which was 0.847 mg g⁻¹, was recorded in the fresh leaf of the TRI 5006 cultivar, and the lowest anthocyanidin content was detected in the fresh leaf of the TRI 3055 cultivar, which was 0.044 mg g⁻¹. According to the results, TRI 5006, TRI 26 and TRI 2043 are potential cultivars to produce purple tea. Therefore, the present study is useful for quantifying anthocyanins and anthocyanidins to screen suitable cultivars for the processing of purple tea.

Keywords: Anthocyanidins, Anthocyanins, Green tea, HPLC, Purple tea

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