

QUANTITATIVE ANALYSIS OF PHENOLICS CONTENT IN TWO ROSELLE VARIETIES BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

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INTRODUCTION

Roselle (*Hibiscus sabdariffa*) is a subtropical plant from Malvaceae family is commonly known as *Asam Paya* in Malaysia and cultivated mainly for its leaves, stem, seed and calyces (sepals) (Fasoyiro *et al.* 2005). Roselle calyces were rich in phenolic compounds and anthocyanins (Mourtzinou *et al.*, 2008). The anthocyanins present in roselle are important for beneficial health effects associated with their antioxidant, antihypertensive, antihyperlipidemic, hepatoprotective, anticancer and many other properties (Padmaja *et al.*, 2014).

OBJECTIVE

To determine the phenolic constituents in calyces of *H. sabdariffa* var. UKMR-2 and var. UMKL-1.

RESULTS & DISCUSSION

- The HPLC profiles & phenolics content in calyces of two roselle varieties are shown in Figure 2 & Table 1.
- 2 predominant anthocyanins were detected in both *H. sabdariffa* varieties and were identified as delphinidin-3-O-sambubioside (**peak 1**) and cyanidin-3-O-sambubioside (**peak 2**).
- The presence of both compounds are in agreement with previous reports on other *H. sabdariffa* varieties worldwide (Jafarian *et al.*, 2014; Kouakou *et al.*, 2015; Bernal *et al.*, 2016).
- In addition, chlorogenic acid (**peak 3**), caffeic acid (**peak 4**) and ascorbic acid (**peak 5**) were also detected.
- The concentration of all compounds is higher in roselle var. UMKL-1 as compared to var. UKMR-2.

- However, Kouakou *et al.* (2015) reported that delphinidin-3-O-sambubioside & cyanidin-3-O-sambubioside contents in *H. sabdariffa* L. originated from Côte d'Ivoire are 21.38 mg/g DW and 17.11 mg/g DW respectively, which is 3 - 5 times greater than var. UMKL-1.

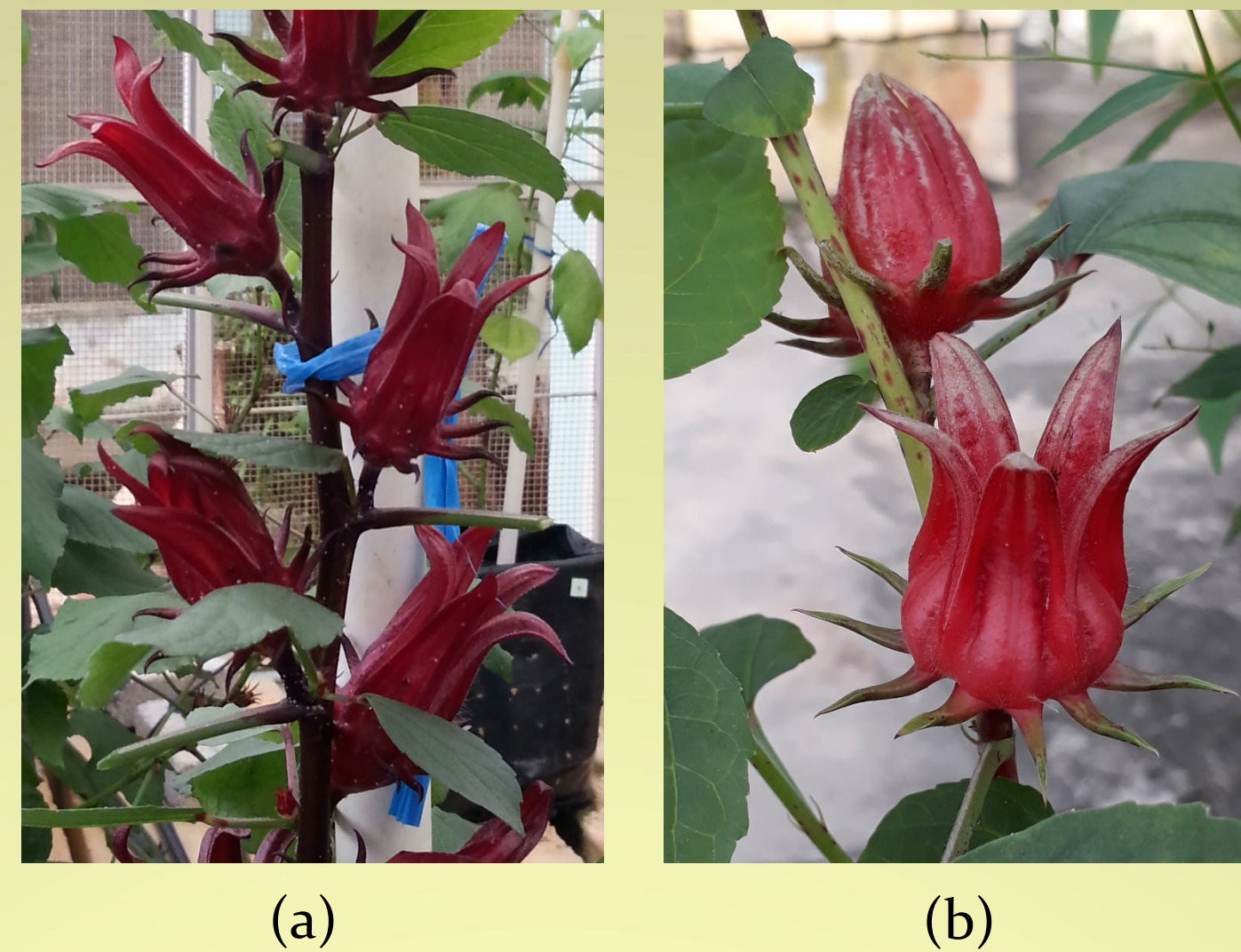


Figure 1: Roselle varieties; a) var. UKMR-2 and b) var. UMKL-1

METHODS

Extraction

Roselle var. UKMR-2 were obtained from UKM greenhouse & Roselle var. UMKL-1 originated from Penang (Figure 1)

Air dried calyces were extracted in water (1:10 ratio)

Water extracts were dried with freeze dryer

HPLC Analysis

10 mg extract was dissolved in 1 mL water containing 0.1% formic acid.

HPLC Waters e2695 separation module & Purospher STAR RP-18e LichroCART column (250 mm × 4.6 mm × 5 μm).

Flow rate (1 mL/min), injection volume (20 μL), temperature (30 °C), solvent A (0.1% formic acid in water, solvent B (0.1% formic acid in ACN)

Chromatograms were monitored at 265, 320 and 520 nm

Table 1: Concentrations of phenolics and ascorbic acid in two roselle varieties

Peak no.	Compound	(mg/g dry weight)	
		Var. UKMR-2	Var. UMKL-1
1	Delphinidin 3-O-sambubioside	2.21 ± 0.72	7.10 ± 0.02
2	Cyanidin 3-O-sambubioside	1.01 ± 0.42	2.91 ± 0.03
3	Chlorogenic acid	0.60 ± 0.21	4.06 ± 0.3
4	Caffeic acid	0.09 ± 0.02	1.58 ± 0.01
5	Ascorbic acid	3.34 ± 1.83	13.12 ± 1.07

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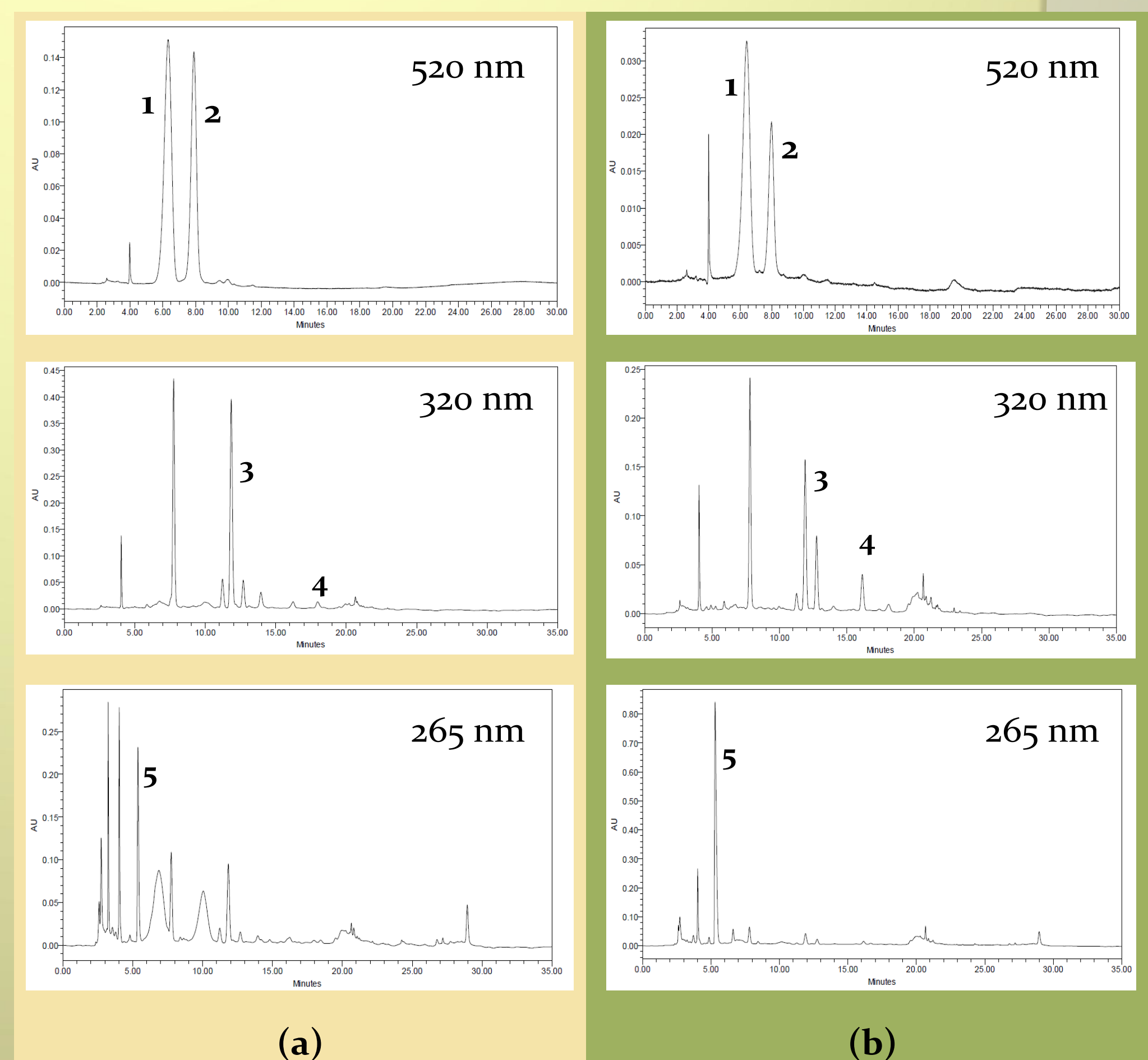


Figure 2. HPLC profiles of phenolics and ascorbic acid in roselle calyces; (a) var. UKMR-2 and (b) var. UMKL-1

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