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Comparative Chemical and Biochemical Analysis of Extracts of *Hibiscus sabdariffa*

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5 **ABSTRACT**

6 *Hibiscus sabdariffa* extracts have attracted attention because of potentially useful bioactivity.
7 However, there have been no systematic studies of extraction efficiencies of *H. sabdariffa*.
8 The nature of extracts used in different studies has varied considerably, making comparisons
9 difficult. Therefore, a systematic study of extracts of *H. sabdariffa* made with different
10 solvents was carried out using water, methanol, ethyl acetate and hexane in the
11 presence/absence of formic acid, using different extraction times and temperatures. The
12 extracts were analysed for total polyphenol content, antioxidant capacity using DPPH, FRAP
13 and TEAC assays, and specific anthocyanins were determined using HPLC and LC-MS. The
14 results showed the highest antioxidant capacities were obtained by extracting using water,
15 with or without formic acid, for 10 min at 100 °C. These extracts provided the highest
16 concentrations of cyanidin 3-sambubioside and delphinidin 3-sambubioside. It will be
17 important to use extraction conditions giving optimal extraction efficiencies for subsequent
18 bioactivity experiments.

19
20 **KEYWORDS:** *Hibiscus sabdariffa*; antioxidant capacity; TEAC; DPPH; FRAP; total
21 polyphenols; solvent extraction; anthocyanins; cyanidin 3-sambubioside; delphinidin 3-
22 sambubioside.

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