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Total phenolic, total flavonoid contents and antioxidant capacity of the different parts of *Adhatoda vasica* (L.) Nees

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Adhatoda vasica (L.) Nees belongs to the family Acanthaceae and is a well-known medicinal plant used in traditional systems of medicine globally. Different parts of *A. vasica* have been used for the treatment of various ailments, mainly for respiratory tract-based ailments considering the vast range of chemical components present in it. Age-related diseases including cancer have become a huge problem and there is an impact on herbal natural medicine to minimize those complications by neutralizing free radicals, which cause damage to body cells. The present study was conducted to quantify the total antioxidant capacity (TAC), total phenolic content (TPC), and total flavonoid content (TFC) of different parts of *A. vasica* using ferric reducing antioxidant power (FRAP) assay, modified Folin-Ciocalteu method and colorimetric method, respectively. Mature leaves, immature leaves, flowers, bracts, soft stems, the bark of mature stem and roots of *A. vasica* were collected from the Kegalle district of Sri Lanka in June to November, 2020 for the experiment. The results revealed that all tested parts of *A. vasica* contained marked amounts of TAC, TPC, and TFC. Among tested parts, immature leaves showed a significantly higher TAC (19.28 ± 1.96 mg/TE g DW) followed by flowers (16.97 ± 0.99 mg/TE g DW) and bracts (14.19 ± 1.85 mg/TE g DW). The highest TPC (11.33 ± 0.14 mg/GAE g DW) and TFC (16.66 ± 3.06 mg/RE g DW) were observed in flowers followed by bracts and immature leaves. Moreover, there were positive correlations of TAC with TPC ($R^2 = 0.5411$) and TFC ($R^2 = 0.5209$) revealing that phenolic and flavonoid components significantly contribute to the antioxidant capacity of different plant parts of *A. vasica*. According to the results, it can be concluded that immature leaves, flowers, and bracts of *A. vasica* contain marked amounts of bioactive compounds and hence could be effectively used as an antioxidant supplement in the pharmaceutical industry.

Keywords: *Adhatoda vasica*, flavonoids, phenolics, total antioxidant capacity

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