Standardization parameters of leaf and stem bark extracts of *Acronychia pedunculata* (L.) grown in Sri Lanka

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Abstract

Acronychia pedunculata (L.) (*Ankenda*) under family RUTACEAE is widely used in Traditional medicine system. The present study was aimed at the development of quality control parameters for identification and authentication of *A. pedunculata*. Hence, standardization is important in maintaining the purity, quality, safety and efficacy of Ayurveda formulations. Phytochemical, physico-chemical parameters and HPTLC fingerprints of methanol extracts of leaves and stem barks were determined as tools for quality standards. Preliminary phytochemical analysis revealed the presence of carbohydrates, reducing sugars, tannins, saponins, alkaloids, flavonoids, anthranol glycosides, phenols, terpenoids and proteins in both leaf and stem bark extracts. Under physico-chemical parameters; total ash, acid insoluble ash, water soluble ash, loss on drying and extractability in methanol for *A. pedunculata* leaves were 40.38% w/w, 12.64% w/w, 34.42% w/w, 21.80% w/w and 17.84% w/w respectively. Total ash, acid insoluble ash, water soluble ash content, loss on drying and extractability in methanol for *A. pedunculata* stem barks were 20.42% w/w, 8.35% w/w, 25.56% w/w, 15.67% w/w and 13.42% w/w. HPTLC profile of *A. pedunculata* leaf extract showed 10 peaks (R_f values; -0.01, 0.11, 0.32, 0.39, 0.43, 0.57, 0.69, 0.77, 0.85, 0.88) whereas, stem bark extract also showed 10 peaks (R_f values; -0.06, 0.02, 0.06, 0.17, 0.34, 0.48, 0.61, 0.71, 0.82, 0.97) for solvent system; n-hexane: ethyl acetate: chloroform in 2: 6: 2 ratio. The above parameters can be considered as a preliminary tool in detection and contrast of raw materials excluding the counterfeit and substandard raw materials in Ayurveda manufacturing.

Keywords: *Acronychia pedunculata* (L.); high performance thin layer chromatography; phytochemical; physico-chemical; standardization

Introduction

Traditional and complementary medicine which plays a major role in the prevention and management of chronic diseases and disorders is a common practice in use for ages in the majority of population specially in the South East Asian countries[1]. Though there is a long therapeutic history serving a large population worldwide, quality control and quality assurance parameters of Ayurveda system are challenging. Herbal drugs which are used singularly or in combinations contain various chemical components. Therefore, it is difficult to establish their quality control, quality assurance and documentation. In addition, expertise is needed in the guidance of developing national regulations and safety monitoring systems[2]. However, the common difficulties and challenges in the standardization of herbal drugs are lack of information sharing and the lack of safety monitoring methods to evaluate the safety and efficacy of herbal drugs. Furthermore, the development of analytical standardization techniques in herbal drug manufacturing is needed to maintain the quality control and validation of the herbal preparations confirming their identity, quality and purity[1]. Sri Lanka is rich with a vast variety of indigenous medicinal plants which are used in the preparation of herbal products. *A. pedunculata* (L.) (Figure 1) is a commonly used herb belonging to the family RUTACEAE which is called *Ankenda* in Sinhala, claw-flowered laurel in English and *Kattukannior Muttainari* in Tamil[3]. It is a small, evergreen aromatic tree with a pale smooth bark and glabrous branches.

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