

In vitro Antioxidant Activity of Two Selected Herbal Medicines

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Abstract—Hot aqueous and methanol extracts of the two selected herbal medicines such as Vellarugu chooranam (V.C) and Amukkirai Chooranam (A.C) were examined for total phenolic and flavonoid contents and *in vitro* antioxidant activity using four different methods. The total phenolic and flavonoid contents in methanol extract of V.C were found to be higher (44.41 ± 1.26 mg GAE/g; 174.44 ± 9.32 mg QE/g) than in the methanol extract of A.C (20.56 ± 0.67 mg GAE/g; 7.21 ± 0.85 mg QE/g). Hot methanol and aqueous extracts of both medicines showed low antioxidant activity in DPPH, ABTS, and FRAP methods and Iron chelating activity not found at highest possible concentration. V.C contains higher concentrations of total phenolic and flavonoid contents than A.C and can also exert greater antioxidant activity than A.C, although the activities demonstrated were lower than the positive control Trolox. The *in vitro* antioxidant activity was not related with the total phenolic and flavonoid contents of the methanol and aqueous extracts of both herbal medicines (A.C and V.C).

Keywords—Activity, Different extracts, Herbal medicine, *in vitro* antioxidant.

I. INTRODUCTION

FOR thousands of years, mankind has known about the benefit of drugs from nature. Plant extracts, for the treatment of various ailments, were highly regarded by the ancient civilizations. Even today, plant materials remain an important resource for combating illnesses [1]. Antioxidants mop up damaging chemicals in the body and guard against many chronic diseases. Heart disease, arthritis, cancer and many other chronic diseases derive from the same source: fortuitous mutations caused largely by free radicals. The cells are protected from decomposition by ensuring sufficient intake of antioxidants daily [2].

The medicinal properties of plants have been investigated in the recent scientific developments throughout the world, due to their potent antioxidant activities, no side effects and economic viability, in recent years one of the areas, which attracted a great treaty of attention, is antioxidant in the control of degenerative disease in which oxidative dent has been implicated. Several plant extracts have been shown to antioxidant activity [3].

Herbal drugs are rapidly becoming popular in recent year as

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an alternative therapy. Numerous single formulations, which are single herbal extracts/ fractions, are used for the treatment of rheumatic diseases. Antioxidants that can protect joints from oxidative damages are included in single formulations. For developing a satisfactory antioxidant herbal formulation, there is a need to evaluate the formulation for desired properties such as antioxidant activity. The desired activities of the single herbal formulations containing plants/extracts have to be tested again in the formulation form [4].

Vellarugu Chooranam (V.C) and Amukkirai Chooranam (A.C) (Fine powder preparation for internal use) are important single herbal preparations which are mentioned in the Traditional medical literatures in Sri Lanka for the treatment of inflammatory conditions and variety of musculoskeletal conditions such as rheumatism, back pain, arthritis, and etc. The main components of the V.C and A.C are whole plant powder of the *Enicostemma littorale* Blume and root powder of *Withania somnifera* Dunal [5], [6].

Various antioxidant activity methods have been used to monitor and compare the antioxidant activity of different extracts of plants and plant products. In this present study, hot aqueous and methanol extracts of these two herbal medicines were examined for total phenolic and flavonoid contents and *in vitro* antioxidant activity using four different methods such as DPPH radical scavenging, FRAP, ABTS and Iron chelating activity.

II. MATERIALS AND METHODS

A. Plant Material

Whole plants of *Enicostemma littorale* were collected during the month of October 2011 to January 2012 in and around Jaffna District. Roots of *Withania somnifera* were purchased from a reputed vendor of herbal material in Jaffna District, Sri Lanka.

These plants (*Withania somnifera* & *Enicostemma littorale*) were botanically authenticated and voucher specimens (Assess. No. 2453 & 2454) were deposited in the Bandaranayaka Ayurveda Memorial Research Institute, Nawinna, Maharagama, Sri Lanka.

B. Preparation of Herbal Medicine

The collected *E. littorale* whole plants were cut in to small pieces and washed with tap water. The purchased *W. somnifera* roots were cut in to small pieces and boiled with cow's milk (1:1w/v). These plant materials were air-dried thoroughly under shade (at room temperature) for 2-3 weeks to avoid direct loss of phyto-constituents from sunlight. The shade dried materials were powdered using the pulverizer and