

## First Report on the *in vitro* Anthelmintic Activity of *Centella Asiatica* (“Gotu Kola”/ “Vallaarai”)

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**Abstract**— Anthelmintic resistance has been reported in animals and also suggested in humans. Thus, there is an urgent need for the identification and development of alternative anthelmintics for human use. With this background, a study was designed to examine two medicinal plants, *Vernonia anthelmintica* and *Punica granatum*, having known anthelmintic activity with another herbal plant, *Centella asiatica*. The aqueous, ethanol and methanol extracts of fresh roots, seeds and leaves of the above plants were obtained separately. Anthelmintic activity was tested *in vitro* by using the earth worm (*Eisenia fetida*) as described earlier. The worms were placed in separate Petri dishes containing 30ml suspensions of methanol, ethanol and aqueous extracts (25mg/ml and 50 mg/ml) of plant extracts. Albendazole at 20 mg/ml and 1% acacia in normal saline were used as the reference standard and the control group respectively. Time taken for complete paralysis and death of individual worms was recorded. All three crude extracts of plants showed greater anthelmintic activity than that of albendazole. The solution containing 50mg/ml aqueous extract of *Vernonia anthelmintica* seeds paralyzed the earth worm within the shortest time (5.10±0.14 min) followed by the solution containing 50mg/ml ethanolic extract of *Centella asiatica* leaves (7.09±0.12 min). Though anthelmintic activity of crude extract was increased proportionately with increased dose, all three plants showed optimum anthelmintic activity at 50mg/ml, promoting paralysis and subsequent death of the worms. It can thus be concluded that in addition to other nutritional values such as iron and folic acid, this is the first report of the anthelmintic activity of *Centella asiatica*.

**Keywords**— Anthelmintic activity, Medicinal plants, *Centella asiatica*

### I. INTRODUCTION

World Health Organization guidelines for the introduction and maintenance of deworming programmes recommend the adoption of mass prophylactic

chemotherapy (treatment without prior diagnosis), with one of two anthelmintics, in communities where the prevalence of soil-transmitted helminthiasis is over 20% (WHO, 2006). Deworming on such a large scale may contribute to the development of anthelmintic resistance, as has been documented in animals (Kaplan & Vidyashankar, 2012) and also suggested in humans (Albonico *et al.*, 2004). Thus there is an urgent need for the identification and development of alternative anthelmintics for human use.

### A. Objective of the study

This study was designed to evaluate two medicinal plants, *Vernonia anthelmintica* and *Punica granatum*, having known anthelmintic activity (Mali & Mehta, 2008) with another herbal plant, *Centella asiatica* (known as “Gotu kola” in Sinhala, “Vallaarai” in Tamil), which was also expected to have anthelmintic activity (personal communication, Ayurvedic Practitioners, Jaffna).

### II. METHODOLOGY AND EXPERIMENTAL DESIGN

The fresh roots of *Punica granatum*, seeds of *Vernonia anthelmintica* and leaves of *Centella asiatica* were collected and air dried in shade at room temperature. Dried plant materials were ground to coarse powder individually by electric grinder.

The crude aqueous extracts were prepared according to the standard methods. Briefly, fifty grams (50g) of the powdered plant material was mixed with 350ml of distilled water and boiled for 1.5 h and filtered after cooling to 40°C. The filtrate was concentrated in a rotary evaporator and the dried sample was stored at 4°C until used.

The solvents extraction was done by dissolving 50 g of dried plant powder in soxhlet apparatus with ethanol and methanol (350ml) separately for 10 hrs at 65°C. The extracts were concentrated to dryness in a rotary pressure evaporator and stored at 4°C until use.

