

## Evaluation of antioxidant and phytochemical analysis of water extracted root powder of *Glycyrrhiza Glabra*

Dunumala B.N.V<sup>1</sup>, Paheerathan V.<sup>2\*</sup>, Piratheepkumar R.<sup>2</sup>

### Abstract

*Glycyrrhiza glabra* is a perineal herb containing chemical composition of glabridin and glycyrrhizic acid. Antioxidant substances cause to blocking of the oxidative stress of the human cells and phenolic and flavonoid also have been proved their effectiveness in chronic diseases. In this study, in vitro antioxidant activity, total phenolic and flavonoids content of hot and cold water extract of five different concentrations were determined by using spectrophotometric methods. Total Antioxidant activity of extracts was expressed with frap (ferric reducing antioxidant power) values of tannic acid equivalents/g dry weight. Antioxidant capacity of hot and cold water extract was  $129.46 \pm 3.4$   $\mu\text{mol/g}$  and  $87.95 \pm 4.1$   $\mu\text{mol/g}$  respectively. Assays of phenolic and flavonoid concentrations were expressed as tannic acid equivalents/g dry weight. Total phenolic content of hot extract was  $51.46 \pm 8.05$  mg /Tannic acid equivalent/g dry material; cold water extract was  $37.68 \pm 0.50$  mg Tannic acid equivalent/g dry material. Total flavonoid content in the hot water extract ( $144.02 \pm 3.52$  mg Tannic acid equivalent/g dry material and cold water extract ( $109.26 \pm 1.82$ mg Tannic acid equivalent/g dry material). Hot water extracts of *Glycyrrhiza glabra* root powder showed the highest phenolic and flavonoid concentration and strong antioxidant activity.

**Keywords:** Antioxidant, flavonoid, *Glycyrrhiza glabra*, phenolic, Frap

### Introduction

The study is invitro based on spectrophotometric method. Substances of free radicals are produced while normal cellular function. But excessive accumulation of the free radicals may leads to serious pathological conditions. Antioxidants are molecules

which react safely with free radicals and neutralized them<sup>1</sup>. Protection of the free radical damage in the human cells can subside with the concentration of the phytochemicals in plants such as rich antioxidant, phenolic and flavonoids. Those chemical concentrations reduce the oxidative stress and prevent chronic diseases<sup>2</sup>. Synergistically effect of active flavonoids caused to therapeutic effect on metabolic disorders such as hyperlipidemia, diabetes and oxidative stress conditions<sup>3</sup>. Dietary intake of the rich phenolic contained food caused to the improving immune system. Hence phytochemicals having role of protective health from diseases<sup>4</sup>.

Currently most researches helps to exploring natural antioxidant in food to utilized and remove the toxins in the body<sup>5</sup>.

*Glycyrrhiza glabra* is a plant that belongs to the Leguminosae family. It is a hardy herb with height up to 2m and found in Sri Lanka under cultivation. The root and stem of the plant are used for medicinal purpose. The root of *G. glabra* has been extensively used in the treatment of many diseases in Siddha Medicine with valuable pharmacological actions. Roots are used as a smooth muscle depressant, antimicrobial, antiviral, hypotensive, hepatoprotective, antiexudative, spasmolytic, antidiuretic, antiulcer, antimutagenic, antipyretics, antioxidant, anti-inflammatory, antinociceptive, expectorant as well as hypolipidemic and antiatherosclerotic (Sharma et al., 2001).

The roots are sweet and refrigerant which are used as an emetic in large doses, used for retention of urine as well as cough, bronchitis and hoarseness of voice. Externally it can use for the wounds and cuts to arrest the bleeding<sup>6</sup>. Root decoction is used for the falling of the hair and premature graying of the hair.

<sup>1</sup>Bandaranayake Ayurveda Research Institute, Nawinna, Sri Lanka.

<sup>2</sup>Unit of Siddha Medicine, Faculty of Applied Science, Trincomalee Campus, Eastern University, Sri Lanka.

\*Correspondence: Paheerathan V., Senior Lecturer, Unit of Siddha Medicine, Faculty of Applied Science, Trincomalee Campus, Eastern University, Sri Lanka. E mail: geethan1978@live.com