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An investigation to antioxidant activity of *Caesalpinia bonducella* seeds

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ABSTRACT

The present study envisages the antioxidant potential of *caesalpinia bonducella*, a widely grown plant of medicinal importance throughout India. Chloroform extract of *caesalpinia bonducella* seeds were screened for antioxidant activity using, DPPH free radical scavenging activity, total phenolic content (tpc) estimation and β - carotene bleaching assay. The results showed Ic_{50} of chloroform extract $170 \pm 4.08 \mu\text{g/ml}$ and that of ascorbic acid is $2.03 \pm 0.16 \mu\text{g/ml}$. Total phenolic content was found to be 21.96 ± 2.12 (for $1000 \mu\text{g/ml}$) and total antioxidant activity (taa) 24.96 ± 0.31 while 'taa' of standard BHA was found to be 46.70 ± 0.43 . The study revealed the presence of antioxidant activity in chloroform extract of *caesalpinia bonducella* seeds.

Key words : Herbal antioxidants, Nata Karanja, Total phenolic content, Seed extract, Natural cure

INTRODUCTION

Oxidative stress plays a major part in the development of chronic and degenerative ailments such as cancer, arthritis, aging, autoimmune disorders, cardiovascular and neurodegenerative diseases (Huy *et al.*, 2008). Oxygen is a highly reactive atom that is capable of becoming part of potentially damaging molecules commonly called "free radicals." Free radicals are capable of attacking the healthy cells of the body, causing them to lose their structure and function (Neogi and Nayak, 1958). Reactive oxygen species (ROS) formed *in vivo*, such as superoxide anion, hydroxyl radical and hydrogen peroxide, are highly reactive and potentially damaging transient chemical species. These are continuously produced in the human body, as they are essential for energy supply, detoxification, chemical signaling and immune function (Ali *et al.*, 2008).

Most of the potentially harmful effects of oxygen are believed to be due to the formation and activity of reactive oxygen species acting as oxidants *i.e.* compounds with a tendency to donate oxygen to other substances. Many reactive oxygen species are free-radicals. A free radical is any chemical species that has one or more unpaired electrons. Antioxidants help organisms deal with oxidative stress, caused by free radical damage, which are highly unstable and cause damage to other molecules by extracting electrons from them in order to attain stability (Ali *et al.*, 2008). Therefore, the oxidants held responsible

for precipitation of number of diseases, and antioxidants can be remedy for the diseases caused by such substances being capable to prevent their effect.

Natural products have received huge attention in the field of pharmaceutical science and technology over past few decades because of their good biocompatibility and cost effectiveness (Sachan and Bhattacharya, 2009a). The biological diversity responds to a number of new, emerging concerns including thrust for research and developments (Mukharjee *et al.*, 2007; Sachan and Bhattacharya, 2009b). In this 'herbal boom worldwide' many researchers have focused on the natural products as source of new medicines as well as an alternative of existing synthetic drugs. Many herbs have proven to have natural antioxidants and are being used in the formulation of ayurvedic and modern drug dosage forms. In this chain, the present study was performed to examine a wild herb *Caesalpinia bonducella* for the presence of antioxidant activity.

Caesalpinia bonducella commonly known as Nata Karanja, a prickly shrub found throughout the hotter parts of the India, Myanmar and Sri Lanka, has grey, hard, globular shaped seeds with a smooth shining surface. Seed consist of thick brittle shell with a yellowish white bitter fatty kernel (Nadkarni, 1954). Seeds contain bitter substance phytosterine, saponin, fatty oil 20 to 24%, starch, 2-phytosterols; bitter amorphous glycoside bonducin

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