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Oxidative free radicals scavenging activity (*in vitro* and *in vivo* assay) of standardized fractions from the seeds of *Argyrea speciosa* (Ghav-patta) a traditional Indian medicineLubna Azmi^a, Ila Shukla^{a,b}, Arti Goutam^a, Ch.V. Rao^a, Talha Jawaid^c, Amani S. Awaad^d, Saleh I. Alqasoumi^e, Osama A. AlKhamees^c, Mehnaz Kamal^{f,*}^a Pharmacognosy and Ethnopharmacology Division, CSIR-National Botanical Research Institute, Lucknow, Uttar Pradesh, India^b Academy of Scientific and Innovative Research, Ghaziabad, Uttar Pradesh, India^c Department of Pharmacology, College of Medicine, Al Imam Mohammad Ibn Saud Islamic University (IMSIU), P.O. Box 11623, Riyadh 11544, Saudi Arabia^d Director of Gateway to United Kingdom Education Ltd., Bradford, United Kingdom^e Department of Pharmacognosy, College of Pharmacy, King Saud University, Riyadh 11451, Saudi Arabia^f Department of Pharmaceutical Chemistry, College of Pharmacy, Prince Sattam Bin Abdulaziz University, P.O. Box No. 173, Al-Kharj 11942, Saudi Arabia

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ABSTRACT

Traditional pertinence: *Argyrea speciosa* Sweet (Linn.), belongs to the family convolvulaceae, a traditional Indian medicinal herb, has been used to treat acute/chronic ulcers, gonorrhea, rheumatoid arthritis and several nervous disorders having a long history.

Aim of the study: A broad spectrum approach of this work was to find out the antioxidant activity of *Argyrea speciosa* seeds, *in vitro* and *in vivo* antioxidant assay were performed.

Material and methods: Total phenolic content (TPC), reducing power (RP), antioxidant activity (AOA), O₂⁻ (superoxide anion), DPPH (1,1-diphenyl-2-picrylhydrazyl) and OH (hydroxyl) radicals scavenging activities, GSH (glutathione), CAT (catalase), SOD (superoxide dismutase) and LPO (lipid peroxidase) are the major parameters which were studied for determining *in vitro* and *in vivo* antioxidant property of seed extract & their six fractions obtained from *A. speciosa*. Carbon tetrachloride (CCl₄) induced rat model was used to determine *in vivo* antioxidant assay of extract and its fractions.

Results: Butanol fraction (AS-BF) showed strong antioxidant property and protected oxidative DNA damage. AS-BF was found best as compared to all other fraction for determining antioxidant property of seeds with the reduction in lipid peroxide formation and increment in GSH, CAT and SOD. AS-BF showed the presence of phenolic compounds viz. gallic acid, chlorogenic acid, and ellagic acid.

Conclusion: From these results, it was proved that *A. speciosa* seeds prevent tissue damage due to oxidative stress with strong antioxidant activity.

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1. Introduction

In the case of human body, oxidative free radicals possess a very important role for various biological activities, such as the intercellular killing of microbes by phagocytic cells like macrophages and

granulocytes (Bhagat et al., 2016). They are involved in a certain cell signaling process known as redox signaling (Pacher et al., 2007). From the latest researches, it is found that oxygen-centered ROS which is abbreviated as reactive oxygen species e.g. superoxide and hydroxyl radical play a very important role in the case of cell signaling (Singh et al., 2017b). However, because of their reactive nature, they are involved in unwanted side reactions causes cell damage. Excess of these ROS resulting in cell damage and cell death. Due to these reasons they pony up maximum diseases e.g. diabetes, cancer, cardiac damage and immunological disease. The body has strong mechanisms to minimize cellular damage by ROS (Vlasova, 2018). In addition, antioxidants obtained from different sources play a very important role in the defense mechanisms of ROS (Sarma et al., 2010). Plants are a rich source

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