



EVALUATION OF PLUMBAGIN IN ROOTS OF *PLUMBAGO ZEYLANICA* FROM DIFFERENT LOCATIONS OF MADHYA PRADESH

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ABSTRACT: Plumbagin is a major active ingredient and phytochemical marker compound for quality assurance of the roots of *Plumbago zeylanica*. Variations in active ingredients according to environmental and edaphic factors have been described for many plant species for their quality standardization and identification of superior chemotype. In the present investigation, the roots of *P. zeylanica* collected from twelve locations belonging to nine agroclimatic regions of Madhya Pradesh were evaluated for Plumbagin content using high performance thin layer chromatography (HPTLC) technique to find out variations in plumbagin content. The result showed the accessions of *P. zeylanica* of TFRI, Jabalpur of best quality and also the superior chemotypes.

Key words: *Plumbago zeylanica*, Roots, Plumbagin, Quantification, HPTLC, Superior chemotype

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Medicinal plants have been used as herbal drugs since times immemorial. In the era of 21st century too, according to the World Health Organization (WHO), approximately 80% of the world's population currently uses herbal medicines directly as teas, decocts or extracts with easily accessible liquids such as water, milk, or alcohol (Anand et al., 2012 and Julsing et al., 2007). The medicinal property of a plant lies in their active/ therapeutic ingredients and high concentration of active ingredients provides elite germplasm. Active ingredients being the secondary metabolites are often influenced by the environmental and edaphic factors and vary from region to region (Sandeep et al., 2015). Therefore, the standardization of herb to fulfill the therapeutic requirement based on quality and efficacy (active ingredient concentration) by applying suitable standards is the need of the hour. WHO and modern herbal pharmacopoeia also lay a strong emphasis on the need for quality standardization of herbs and their subsequent standardization with respect to their active ingredients (Sharma et al., 2010, Joshi and Uniyal, 2008 and Vasudevan, 2009).

Plumbago zeylanica Linn. (family: Plumbaginaceae) is a large perennial undershrub, found throughout the tropical and subtropical countries of the

world. It grows throughout India in moist places (Chetty et al., 2006 and Pant et al., 2012) and commands an important place among medicinal herbs. In Indian indigenous systems of medicine, the plant has been described as tumor-negating, anti-dyspeptic, appetizer, anti-saturative, antianorexic, anti-haemorrhoidal and pain-reliever. The plant has also been found significant in different clinical conditions, especially inflammation, leprosy, scabies, ringworm, dermatitis, ulcers, hemorrhoids and hookworm (Tilak et al., 2004). Herbal medicines such as Dabur Chitrak Haritaki, Medohar Guggulu, Morslim-Z, Divya Chandraprabhavati etc. use *P. zeylanica* extracts in different amounts (Vishnukanta and Rana, 2010). In Africa, Nigeria, Ethiopia, Mauritius and Rodrigues, different plant parts (leaves, roots, bark etc.) of species are reported to be used to treat gonorrhoea, diarrhea, dyspepsia syphilis, tuberculosis, rheumatic pain, rheumatic swellings, wounds, influenza, black water fever, shortness of breath, inflammation in the mouth, throat and chest, as a counter-irritant and vesicant (Pant et al., 2012). *P. zeylanica* is listed among the high trade medicinal plant species in India (Ved and Guraya, 2007) and annual turnover of its roots is estimated approximately 500 Mt tonnes (Sharma et al., 2008). Due to being high trade species, over exploitation