Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci. (Oct–Dec 2021) 91(4):821–828
https://doi.org/10.1007/s40011-021-01286-3

RESEARCH ARTICLE

HPTLC Fingerprinting of Cultivated *Picrorhiza kurrooa* Accessions in Uttarakhand, Western Himalaya

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Received: 7 March 2020 / Revised: 7 March 2020 / Accepted: 3 August 2021 / Published online: 9 September 2021

Abstract *Picrorhiza kurrooa* Royle ex Benth (Kutki or Kadvi) belonging to family Plantaginaceae is a valuable herbaceous plant. The target accessions of species were cultivated at Herbal Nursery (Pothivasa, 2200 masl.) of High Altitude Plant Physiology Research Centre (HAPPRC) Srinagar Garhwal (Uttarakhand) India, and the results obtained on the basis of high-performance thin-layer liquid chromatography (HPTLC) showed a varied range of picrosides content, i.e., Picroside-I (0.138–5.677%), Picroside-II (0.697–7.048%), and total picrosides (2.154–7.444%). The plant leaves (Picroside-I 4.54%; Picroside-II 1.32%) and stolons (Picroside-I 0.46; Picroside-II 5.52%) were proved as a potent source (average value) of picrosides content based on NJ and PCA analysis. The outcomes suggested that market demands might be fulfilled by the supply of leaves, which will be helpful for conservation of species and elite accession will be further used for multiplication. Therefore, mass-scale cultivation of *P. kurrooa* should be promoted. Cultivation of species will be helpful for reducing pressure on wild populations, meet up the market demand, develop employment opportunities, and conserve the biodiversity.

Keywords *Picrorhiza kurrooa* · Picroside · Cultivation · HPTLC · Himalaya

Significance statement: The study revealed that cultivated accession of *P. kurrooa* is a good source of iridoid glycosides (picrosides). Therefore, to accomplish the market demand, large scale cultivation and utilization of plant leaves will be helpful for reducing the pressure on wild populations.

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Introduction

Picrorhiza kurrooa Royle ex Benth (Kutki or Kadvi) belongs to family Plantaginaceae is a valuable herbaceous plant, reported to be widely distributed from 3000 to 5000 masl in India (Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim), Pakistan, Nepal, Bhutan and China [1–3]. The plant parts such as shoots, stolons and roots showed pharmacological properties and used in traditional and modern system of medicine, such as liver disorders, fever, asthma and jaundice [4, 5] gastrointestinal, urinary disorders, snake bite, leukoderma, scorpion sting, inflammatory affections, antiperiodic, cholagogue, stomachic, laxative, hepatoprotective, antiasthamatic activities [6], jaundice and the steaming of bones [7]. The species is used for formulation of several health caring herbal tonics viz., Picroliv, Livokin, Picrolax, Livomap, Tefroliv, etc., [8]. Today, demand and market of the species are increased globally, due to the presence of diverse natural bioactive compounds. Approximately 375 tons/year supply of *P. kurrooa* was reported globally, in which India contributing around 70 tons [9].