

# Production and Elicitation of Medicinal Compounds in *in vitro* Grown Plants of Important herb *Gentiana kurroo*

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## ABSTRACT

*Gentiana kurroo* is a critically endangered bitter herb of Indian subcontinent region. It is perennial and commonly grows in Kashmir, Himachal Pradesh and adjoining hills of North-Western Himalaya between 1500–3000m altitudes. Commonly known as karu, Indian gentian is a significant drug of Chinese and Indian herbal preparations'. The rhizome and roots of this herb contains a variety of secondary metabolites like bitter glycosides (gentiopicoside and gentianin), alkaloids (gentiamarin), etc. Therefore the present study was done to devise a *in vitro* method for large scale production of high quality plants with which medicinal compounds can be planted back in nature and used as a authentic recourse for metabolites production. The conditions for micro-propagation of *Gentiana kuroo* were optimized where maximum number of shoots (11-12) was obtained. As it is reported for the first time that gentiopicroside was produced through shoot cultures of *Gentiana kurroo*. Different growth hormones, compounds like Phenylalanine, Methyl Jasmonate, Seaweed, Chitosan and different concentration of sucrose were used to increase the accumulation and production of metabolites. Significant amount of gentiopicroside was quantified in elicitation media having seaweed(3g/L)+MS+KN(3mg/L) +IBA(1mg/L)+Sucrose(30g/L) and in media having containing Methyl Jasmonate (100µM)+MS+KN(3g/L)+IBA(1g/L)+Sucrose(30g/L) where highest content of gentiopicroside was 0.2µg/mg obtained in shoots. Presently the pharmaceutical industry is mainly dependent on the natural sources for procurement of gentiopicroside and as a result there is a threat to the natural population of the plant which is one of the main causes of endangered status of species like *Gentiana kurroo*. So this developed technology will surely provide a platform for the production of quality rich planting material and medicinally important compounds which would restrain the exploitation of this species from natural resources by pharmaceutical and herbal drug industry.

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