Seed marker traits behave as biosensor for the reflection of altitude change in case of an endangered Himalayan medicinal plant; *Valeriana jatamansi*

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ABSTRACT

V. jatamansi Jones, is the native of North-eastern Himalayan region with distribution range from Afghanistan, India, Bhutan and Nepal. The plants are cultivated in temperate Himalaya between 1000 to 3000 mASL. Its roots and rhizomes contain valerenic acid and valepotriates which is exploited as the metabolite is highly effective in the treatment of sleep disorder, obesity, nervous disorders, epilepsy etc (Mathela et al., 2005). Present research programme focused on the biodiversity study caused due to geographical changes create some morphological variation in the seed structures. Such high altitude plants when brought to lower altitude, it might induce significant changes in the seed length and thickness. Plants from the higher altitude i.e. Kalimpong (1097m ASL) may have seed length of 759.37 µm which decreases initially to 725.40 µm in case of one year exposed lower altitude exposure that is Uttar Banga Krishi Viswavidyalaya (UBKV i.e. 43m ASL), farm field and it suddenly raises to 1114.74m ASL in case of two consecutive year exposure of the plant to UBKV. The same planting material (one year already exposed UBKV plants) when send back to Kalimpong again its length decreases to 717.93 µm in the second year. One year exposed Kalimpong plant shows a seed length of 723.05 µm, where as its length suddenly increases and exceeds the control plant values such as 764.49 µm. Including this one, many more characters have been studied for the seed variation over the altitudinal change may be considered as bio-sensor technique.

Keywords: biosensor, higher altitude, lower altitude, V. jatamansi

