

3<sup>rd</sup> International Conference on

## PLANT SCIENCE &amp; PHYSIOLOGY

May 21-22, 2018 Osaka, Japan

**Medicinal and aromatic plants of Himalayan zone and their therapeutic properties for pharmaceutical industry****Atul Kumar and Vandana Atul Kumar**

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Medicinal and aromatic plants have played a vital role in providing healthcare to man since the dawn of civilization. India is bestowed upon with varying agro-climatic conditions by the nature and thus constitutes one among the richest gene pool of rare medicinal and aromatic plants and other valuable herbs in the world. In fact, the kind of biodiversity present in Himalayan region is available nowhere in the world. Varying geographical features along with climatic conditions, and wide range of altitude, ecology and topography have contributed in making the Himalayan region a rich repository in biodiversity. Over 3000 plant species are known for their medicinal properties in India. Several of the natural products derived from plants include life-saving drugs like codeine and morphine (analgesic antitussive alkaloids from *Papaver somniferum*-the opium poppy), taxol (derived from *Taxus baccata* to cure cancer patients), vincristine and vinblastine (alkaloids extracted from periwinkle-*Catharanthus roseus* to treat leukemia), quinine (the anti-malarial alkaloid derived from *Cinchona bark*); essences and fragrances like rose oil, jasmine; pesticides like nicotine (from *Nicotiana tabacum*) and pyrethrin (from *Pyrethrum cinerarifolium*) and raw material for various industrial establishments such as pine oil, fatty acids and natural rubber. Important medicinal plants presently exploited by pharmaceutical industry in India along with endangered species of rare medicinal plants of Himalayan region are discussed.

**Recent Publications**

01. Pawan KJ, Kumar VA, Shah S and Kumar A (2009) Photoautotrophic Micropropagation For Cost Effective And Successful Clonal Multiplication Of Fruit Crops. In : Proceedings of 1st International Symposium on Biotechnology of Fruit Species, M.V. Hanke Eds., *Acta Hort.*, Vol. 839, pp. 93-98.
02. Kumar V A and Kumar A (2007) Slow growth in vitro storage of plum shoot cultures. *Indian Journal of Horticulture*, 64(1):79-80.
03. Joshi K, Pant NC, Kumar VA and Kumar A (2016) Antioxidant and antimicrobial activities in flowers of *Gentiana kurroo* Royle, a critically endangered plant from Garhwal region of Uttarakhand, India, *Medicinal plant: International journal of phytochemicals and related industries*, 8 (2), 151-157. doi : 10.5958/0975-6892.2016.00008.
04. Kandpal G, Nautiyal MK and Kumar A (2017) Role of silicon solubilizer for water stress tolerance in different genotypes of rice (*Oryza sativa* L.). *Green Farming*, 8 (4):840-844.
05. Semere T and Kumar A (2016) Laser capture microdissection and its applications in plants. *Journal of Hill Agriculture*, 7(2): 173-177.

**Biography**

Atul Kumar is currently working as Professor (Plant Physiology) at College of Basic Sciences and Humanities of G B Pant University of Agriculture and Technology, India. After obtaining his Masters in Plant Physiology (1977) and PhD in Horticulture (1983), he is engaged in Teaching and Research in various aspects of Plant Sciences for over 30 years. He has expertise in the area of Plant Tissue Culture of important Fruits, Vegetables, Ornamentals and Medicinal and Aromatic Plants. He has authored three Text-cum-Reference Books on Plant Tissue Culture and has over 80 publications of different categories to his credit.

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