Development of bioactivity validated medicinal herbal teas (infusions) from traditionally known edible flora of Uttarakhand

Summary:

Uttarakhand is known for its rich biodiversity and herbal traditions. Under the **'One University One Research'**-project we have been tapping into the Himalayan region's **rich biodiversity** and centuries-old **herbal traditions** to develop **scientifically validated medicinal herbal teas**. Rooted in Ayurveda and locally emerged medicinal practices, the initiative seeks to preserve Uttarakhand's herbal heritage through its **documentation** and **scientific validation**, alongside scope of generating entrepreneurship opportunities in long-term. Unlike many commercial herbal teas that **lack scientific backing** and have other shortcomings (viz. **adulteration**), this project **integrates traditional knowledge with cutting-edge science** to produce effective and pure herbal teas for improving human-health. Through extensive literature reviews and consultations with experts, we have **identified over 35 traditionally used medicinal herb**s suitable for tea formulations. Advanced techniques like **DNA-barcoding** and **chemical profiling** have been used to ensure herb **authenticity**, thereby eliminating adulteration risks. A **laboratory herbarium** is also being maintained in this direction for rapid specimen-matching, as well as to support ongoing research and education. Through carrying out different experiments we have **identified/validated the potency of >30 traditional herbs** with **antioxidant** and/or **anti-diabetic** (blood sugar lowering) properties.

Under this project we have developed three distinct herbal tea formulations: (i) **A Rhododendron-based Antioxidant Tea** (blending Rhododendron petals, Berberis leaves, Rose petals, and Mentha leaves), offers antioxidant, antimutagenic, anti-cancer, and anti-diabetic benefits; (ii) **Another anti-oxidant Tea** (combining Pomegranate peel with Lime balm leaves) also provides similar health benefits; and (iii) **An Antidiabetic Tea** that combines Berberis leaves, Chicory roots, Rhododendron flowers, and Cinnamon leaves, has been designed to target increased blood-sugar level. Use of herbs imparting natural aroma and colors enhance the **acceptance and enjoyability** of these teas, setting them apart from other commonly available market options. **The university has also filed three patents:** one for synergistic bioactivity in herbal blends and two for enhancing the solubility of beneficial

compounds, boosting efficacy. These achievements highlight the project's commitment to rigorous scientific validation and innovation.

Under the aegis of this project **training of undergraduate, graduate, and doctoral students, is also being facilitated** with aim of fostering a new generation of **herbal research experts**. Therefore, this initiative not only preserves traditional knowledge but also positions it as a cornerstone of sustainable development. **By bridging tradition and science, Kumaun University's Herbal Tea Project enhances public health and ensures the enduring legacy of Uttarakhand's herbal wisdom for future generations, contributing to a healthier and sustainable future.**