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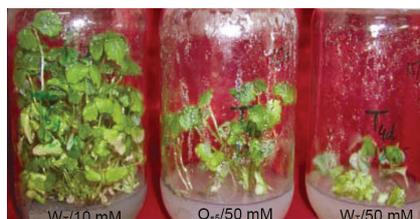
Ptaquiloside and quercetin in certain Indian ferns

Enzootic bovine haematuria (EBH), a chronic incurable neoplastic ailment of urinary bladder in cattle in certain regions of world including hill regions of India, is known to be caused by the interaction of bracken fern toxin (ptaquiloside) and bovine papillomavirus-2 (BPV-2). In the study (**page 1683**), the carcinogen, ptaquiloside (Pta) and the potential carcinogen, quercetin was quantified in various ferns growing in certain EBH enzootic areas of Himachal Pradesh and Uttarakhand, two mountainous states of northern India, where this ailment is a major problem in hill cattle. Of the 25 studied samples of ferns, 9 samples collected from both the states were found to contain Pta on HPLC and LCMS analyses. Four new ferns were identified to contain Pta. Quercetin was also analysed by TLC in 32 fern samples and was detected in 17 samples. The study also reveals that some ferns were found to contain the toxin and flavanoid. The environmental toxins present in these non-bracken fern species are suspected in contributing to the etiology of EBH along with BPV-2.

Modifying strawberry for better adaptability to climate change

Husaini *et al.* (**page 1660**) describe the role of multifunctional tobacco PR-5c protein osmotin in providing salt tolerance and drought tolerance in strawberry, as well as the role of

fungi *Piriformospora indica* and *Sebacina vermifera* in imparting beneficial effect to these transgenic/ *in vitro*-regenerated non-transformed plants. The study reveals that: (a) Osmotin transgenic plants of strawberry show better tolerance to water deficit stress and to salinity stress under hydroponic culture. (b) Randomly Amplified Polymorphic DNA



(RAPD) fingerprinting of *in vitro*-regenerated plants (transgenic/wild type) could not detect any cryptic genetic defects arising via somaclonal variation in these plants and also that the difference in rate of growth between transgenic and wild-type plants could only be due to osmotin overexpression. (c) Inoculation of the *in vitro*-developed transgenic shoots with plant growth promoting fungi *P. indica* and *S. vermifera* helped in overcoming the growth penalty imposed by overexpression of osmotin. Under climate-change conditions, crop plants would often experience more than one biotic and abiotic stress and therefore transgenic plants with the osmotin gene could be effective in imparting resilience to multiple stresses. Further, *P. indica* promises to be a strong candidate for biological hardening of micropropagated plantlets as the fungus helped achieve more

than 79% survival rate of strawberry plantlets.

Open Source Drug Discovery

Despite the fact that global health has undergone revolutionary changes during the past few years, the drug discovery pipeline for tropical diseases like tuberculosis (TB) and malaria have been relatively dry. Whereas drugs for life style diseases remain to be the focus area of global pharma industries, TB and malaria, aptly called 'the neglected tropical diseases', continue to be major cause of mortality and morbidity among large population or underprivileged people, especially in the developing countries. The lack of market incentives has discouraged the discovery and development of novel drugs, in the case of neglected tropical diseases prevalent in the developing countries with poor purchasing power.

In the article, Geetha Sugumaran (**page 1637**) explores the need of the development of novel business models that along with fostering innovation can provide an affordable healthcare and discusses about one such cognizant model developed by the Open Source Drug Discovery (OSDD) project of the Council of Scientific and Industrial Research (CSIR). The article brings out the attributes of the OSDD model that uniquely blends the principles of Intellectual Property Rights (IPR) and distributed co-creation to promote discovery of new drugs in open-source mode while enabling and encouraging patenting.