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Content

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ANTICANCER EFFICACY OF SOME SELECTED VEGETABLES

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Abstract: The global cancer epidemic is rising continuously, placing further strains on the individuals, the families and the societies (in which they live). The number of cancer cases and related deaths worldwide, estimated to double over the next 20-40 years. Research over the past several decades suggests that a high intake of vegetables decreases the risk of several cancers both in experimental animals and in humans. Epidemiological studies point to the fact that long-term consumption of diet rich in vegetables reduces the risk of chronic diseases especially cancer (Temple and Gladwin, 2003). Chemoprevention, by the use of natural products, that can reverse / suppress or prevent carcinogenic progression, has become an appealing strategy to combat the dogma associated with increasing cases of cancers worldwide. Such diets can minimize exposure to deleterious substances, activation of procarcinogens and can maximize the intake of certain beneficial nutrients like isothiocyanates, unsaturated fatty acids, polyphenolic terpenoids (PPT), selenium, terpenes, *etc.* Current evidence suggests that garlic, green tea, tomatoes and soy intake as part of the diet may be useful in preventing various cancers. A number of exciting researches suggest that vegetables, fruits, whole grains, herbs, nuts and seeds contain an abundance of polyphenolic compounds, terpenoids, sulphur compounds, pigments and other natural antioxidants, that have been associated with protection from or treatment of conditions such as cancer. Therefore, we can say that natural products have been a prime source of highly effective conventional drugs for the treatment of many forms of cancer and regular consumption of vegetables is associated with reduced risk of cancers and additive/ synergistic effects of phytochemicals in these vegetables are responsible for their potent antioxidant / anticancer activities.

Keywords: Vegetables, Anticancer, Antioxidant, Polyphenols, Terpenoids

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HARNESSING MUTATION BREEDING FOR SUSTAINABLE CROP DEVELOPMENT: FROM PRINCIPLES TO SUCCESS STORIES

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Abstract: Mutation breeding has emerged as a powerful tool in crop improvement, offering a means to generate novel genetic variation beyond what is available in natural germplasm. By inducing mutations through physical and chemical mutagens, breeders have successfully developed improved varieties with enhanced yield, quality, stress resistance, and adaptation traits. Cereals, legumes, oilseeds, horticultural crops, and industrial crops have benefited extensively, with rice, barley, groundnut, soybean, grapefruit, cotton, and vegetatively propagated crops contributing notable success stories. The

integration of modern molecular platforms such as TILLING, Mut Map and next-generation sequencing has transformed mutation breeding from a largely random process into a targeted and high-throughput strategy, enabling rapid allele mining and gene discovery. Despite challenges related to large-scale screening, epigenetic instability, linkage drag, and perception issues, advancements in high-throughput phenotyping, predictive breeding, and genomic selection are significantly improving the efficiency of mutant detection and deployment. With growing emphasis on climate resilience and sustainable agriculture, mutation breeding remains a complementary approach to genome editing, capable of creating unique alleles and offering regulatory advantages in many regions. This review highlights the principles, technological innovations, limitations, and success stories of mutation breeding, underscoring its enduring relevance in developing future-ready, sustainable crop varieties.

Keywords: Mutation, Breeding, Crop improvement

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FLORISTIC DIVERSITY OF KOLLERU LAKE (RAMSAR SITE), ANDHRA PRADESH, INDIA

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Abstract: The present study focusses on the current status of the floristic diversity (Angiosperms) of Kolleru lake, Andhra Pradesh, India. The Kolleru Lake is a dynamic freshwater ecosystem with high ecological value and socio-economic importance for the region. It faces threats from anthropological activities but remains a critical site for biodiversity and a source of sustenance for its surrounding communities. In this contest the floristic studies have been conducted past few years during the filed explorations a total of 256 species plants belonging to 191 genera and 55 families were reported of these 167 herbs, 14 climbers, 15 twiners, 26 shrubs 26, and 34 trees were reported. According to IUCN criteria, Endangered 1, Data Deficient 2, and Least Concern 109. The present documentation will help to better understand the botanical diversity in this unique protected area for further conservation and management of the sanctuary.

Keywords: Wetland ecosystem, Kolleru Lake, Ramsar Site, Floristic Diversity, Conservation, Management.

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DEVELOPMENT OF MICROPROPAGATION PROTOCOL FOR LITTLE GOURD (*COCCINIA GRANDIS* L.) UNDER IN VITRO CONDITIONS

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Abstract: An efficient protocol was developed for plant regeneration, multiplication and rooting under in vitro condition in *Coccinia grandis*. Seed setting is low and seeds are pseudo due to parthenocarpic nature. So far, farmers in India have been cultivating tindora traditionally through the age-old asexual cuttings, which are often infected by diseases and pests such as thrips and aphids, and therefore give low yields. Micro propagated tindora offers clean disease-free planting material and thereby giving as much as 10 times higher yield than traditional propagules. The present experiment was conducted at Center for Advance Research in Plant Tissue Culture, Anand Agricultural University, Anand during 2018 - 2019. Combination of bavistin (2000 ppm) for 18 min., cefotaxime (1000 ppm) for 14 min., kanamycin (1000 ppm) for 14 min., streptocyclin (1000 ppm) for 18 min. and 0.1% $HgCl_2$ for 8 min.for hard node explants, bavistin for 16 min., cefotaxime for 12 min., kanamycin for 12 min., streptocycline for 16 min. and 0.1% $HgCl_2$ for 7 min. for soft nodal explants and bavistin for 10 min., cefotaxime for 6 min., kanamycin for 6 min., streptocyclin for 8 min. and 0.1% $HgCl_2$ for 2 min. was found best for surface sterilization in the term of fungal contamination, bacterial contamination and drying of the all explants. Half strength of MS was the best initiation medium for all the explants. Treatment T_6 took lesser number of days to sprouting and gave

higher number of sprouted explants and response percentage at 7, 14 and 21 days after initiation. Half strength of MS supplemented with 0.1 BA mgl^{-1} was optimum for maximum multiplication of shoots. Half strength of MS supplemented with 0.1 mgl^{-1}BA+1.0 $mgl^{-1}GA_3$ was optimum for maximum length of shoots. Half strength of MS supplemented with 1.0 IBA mgl^{-1} was optimum for maximum root length. Half strength of MS supplemented with 2.0 IBA mgl^{-1} was optimum for maximum number of roots. Coco peat was best suited for overall development of plants during primary hardening.

Keywords: Micro propagation, Parthenocarpic, Hardening

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UNVEILING THE POTENTIAL: FRENCH BEAN (*PHASEOLUS VULGARIS* L.) PERFORMANCE IN CHAMPHAI DISTRICT MIZORAM

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Abstract: This study was designed in order to evaluate the yield performance of three French bean varieties namely Arka Anoop, Arka Suvidha and Arka Saraath in Champhai District Mizoram. It has been observed that variety Arka Anoop recorded maximum values with respect to Plant height Primary branches, Pod weight, Average No of pods per plant, and yield as compared with other two varieties namely Arka Suvidha and Arka Sarath.

Keywords: Frencah Bean, Yield, *Phaseolus vulgaris*, Mizoram