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An effective system for a better understating of plant cold tolerance

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An effective protocol for cauliflower micropropagation was developed by Rihan and enables the production of thousands of microshoots per cauliflower curd and provides an optimal system for the analysis of the physiological and molecular responses of cauliflower to various types of abiotic stresses. Moreover, these microshoots can be used for artificial seed productions which are required to show a high level of abiotic stress tolerance in order to be a cost effective method for cauliflower propagation. Molybdenum (Mo) was used in this study to improve the cold tolerance of cauliflower microshoots/artificial seeds. The capacity of Mo to up-regulate CBF/DREB1 in cauliflower microshoots was confirmed. The study could help in improving the understanding of the abiotic stress network in plants and in improving the quality and efficiency of cauliflower artificial seed production systems.

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Characterization of type-II fish collagen extracted from shark cartilage and its potential effect on rheumatoid arthritis

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Type-II pepsin soluble collagens (PSC) were isolated from cartilage of shark and examined for their biochemical and antioxidant properties. The purifiedcollagen was composed of an identical $(\alpha_1)_3$ chains. The biochemical properties such as viscosity, solubility, amino acid composition, glycoprotein content, SEM, FTIR, CD and DSC spectra and antioxidant properties substantiated that PSC could be used as a suitable biomaterial for pharmaceutical and biomedical industriesas an alternative source of mammalian collagen. From the gut-sac (*in vitro* intestinal absorption) experiments, weidentified hydrolysates within a MW range from 70 kD to 8 kD on the serosal side of the intestine after the application of collagen hydrolysates and a significant amount of collagen hydrolysate is absorbed in the molecular form of 35-40 kDa. In continuation, type-II collagen ouspolypeptide (37 kDa) was successfully separated fromthe hydrolysates and studied for theirphysico-functional and antioxidant properties. Further, we target to confirm the effects of oral tolerance of PSC on inflammatory and immune responses to the ankle joint of rheumatoid-arthritis (RA) ratsinduced by Complete Freund's adjuvant.The immunological indexes such as delayed type hypersensitivity, IL-10 and T cell apoptosis showed that PSC with concentration 10 µg/L could have significant effect in the model. The result of histological staining indicated that the recovery of the articular membranes of ankle joint in PSC group was greatly enhanced. In conclusion, the present results suggest that appropriate dose of PSC can not only ameliorate symptoms but also modify the disease process of RA.

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