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Biomedical application of natural molecule chitosan and its chitooligosaccharides

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The chitosan, which is biodegradable, non-toxic and biocompatible non-allergenic has been shown to be particularly useful in many fields including food, cosmetics, biomedicine, agriculture and possess versatile functional properties such as antitumor enhancing properties, immune-stimulating effects, antimicrobial activity, free radical scavenging activity arthritis controlling activity. Chitosan shows its biological activity only in acidic medium because of its poor solubility at pH above 6.5 and low absorbability of non-digestible and high molecular polysaccharides. In this respect, chitosan oligosaccharides, because of their shorter chain length, display a reduced viscosity and are soluble in aqueous media at pH values close to neutrality, which increases their bioavailability and opens a wide range of new potential applications. Keeping in mind the above biomedical aspects of chitosan the present study has been conducted to investigate the therapeutic effect of chitooligosaccharides in diabetes mellitus; the study showed that blood glucose, urea and creatinine were decreased in diabetic mice administered with chitooligosaccharides. Chitooligosaccharides lowered the serum SGOT and SGPT levels which reveals the protective effect and normal functioning of liver in reversing the organ damage due to diabetes which clearly observed by high levels of serum transaminases in diabetic control. Chitooligosaccharides also results a significant recovery in the levels of biosensors of lipid profile. Chitooligosaccharides therapy increased the activity of catalase and superoxide dismutase in hepatic tissues of treated diabetic mice. The work exposes that chitooligosaccharides has significant effect for curing diabetic mellitus and related complications.

Recent Publications

01. Singh B, Katiyar D, Chauhan RS, (2014) Differential Effects of Nitrogen based Fertilizations on population of Methane-Consuming Microbes in soil planted with rainfed Rice cultivar NDR-97. *Journal of pure and applied Microbiology*.

02. Singh B, Tilak R, Srivastava RK, Katiyar D (2014) Urinary Tract infection and its risk factors in Women: an Appraisal accepted in Journal of pure and applied Microbiology- 8 (5), 4155-4162.

03. Singh B, Katiyar D, Tilak R, Srivastava RK, (2014) In vitro assessment of antimicrobial potency and synergistic effects of medicinal plant extract against pathogenic bacteria - African journal of Microbiology research.

04. Katiyar D, Hemantaranjan A, Singh B and A Nishant Bhanu (2014) A Future Perspective in Crop Protection: Chitosan and its Oligosaccharides. Adv Plants Agric Res. 1(1): 06.

05. Chauhan RS Singh B, Katiyar D, Misra PK (2015) Seasonal Variation Investigations on Diversity of Some Freshwater Diatoms of Kumaon Region, Uttarakhand State in India Journal of Pure and Applied Microbiology,. Vol. 9(1), p. 367-376.

Biography

Bharti Singh is a sincere scholar of biological Sciences. Currently she is working VitaeGen Biotech-Educational and research Institute, Varanasi as a research associate on various aspects of diseases. She also worked as scientist in Department of Microbiology, Institute of Medical Sciences, and Banaras Hindu University. She has attended more than 10 National and International conferences. She has published more than 20 research papers Received 2 best paper presentation awards in various National and International conferences.

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