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Association of MC4R rs17782313 and BDNF rs6265 with obesity and associated phenotypes in Pakistani population

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Introduction: Chitinases are hydrolytic enzymes that break down the glycosidic bonds in chitin. Chitin is a component of the cell walls of fungi and exoskeletal elements of some animals (including worms and arthropods), therefore, chitinases are generally found in organisms that either needs to reshape their own chitin or dissolve and digest the chitin of fungi or animals. The importance of chitinase in industries cannot be overemphasized as it has been applied in agriculture, as a biopesticide for control of plant fungi infections, in medicine, as indicators of fungi infection and in waste management, for biodegradation of fish waste. Potential use of naturally occurring bacteria,actinomycetes and fungi replacement or supplements for chemical pesticides have been addressed in many studies. Chitin, a homopolymer of ß-1,4-linked N-acetyl-D-glucosamine residues, is the most abundant renewable resource after cellulose. It is widelydistributed in nature as a structural component ofcrustacea, fungi, protozoa and insects. The annualglobal yield of chitin is assumed to be 1 to 100 billion metric tons, making chitin the second most abundant polysaccharide on the earth. Chitinases (EC 3.2.1.14) are glycosyl hydrolases, which catalyze the degradation of chitin. These enzymes are present in a wide range of organisms such as bacteria, fungi, insects, plants and animals. Chitinases are divided to family 18 and family 19 of glycosyl hydrolases on the base of their amino acids sequences. Screening and isolation oforganisms capable of producing chitinase is usually done on a medium containing chitin. The chitinases of the above-mentioned organisms play important physiological and ecological roles. In addition, some chitinases of chitinolytic bacteria, such as the chiA gene produced from Serratia marcescens and Enterobacter agglomerans are potential agents for the biological control of plant diseases caused by various phytopathogenic fungi. The latter enzymes inhibit fungal growth by hydrolyzing the chitin present in the fungal cell wall. Antifungal proteins such as chitinases are of great biotechnological interest because of their potential use as food and seed preservative agents and for engineering plants for resistance to phytopathogenic fungi.

Materials And Methods: Sample sites and microbial strains: Rhizospheric soil samples of maize, wheat and rice were collected from Giza, Helwan and Mansoura, for isolation of chitinolytic bacteria.

Isolation and identification of bacteria: Suspensions were made by adding 5g of soil to 50ml sterile basic salt solution. Ten fold dilutions of these suspensions were plated on Luria -Bertani (LB) agar. Only colonies from the highest dilution of the soil suspensions were selected for isolation of bacteria. For enrichment of chitinolytic bacteria, a minimal salt medium containing a colloidal chitin as sole carbon and energy source was used. Screening of chitinolytic bacteria isolates was carried out by spread inocula of each colony on plates containing a minimal salt medium with colloidal chitin as a sole carbon and energy source. The chitin-degrading organism formed colonies of 1-2 mm in diameter, surrounded by clear zones indicating chitinase activity. Only 5% of 400 isolates exhibited different clear zones sizes.

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