Joint Event on International Conference on Pharmaceutical Chemistry & International Conference on Synthetic Biology, July 16-17, 2018, Paris, France - 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 may be 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 can't be overemphasized because 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 present bacteria,actinomycetes and fungi replacement or supplements for chemical pesticides are 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 world . 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 bottom of their amino acids sequences. Screening and isolation oforganisms capable of producing chitinase is usually done on a medium containing chitin. Fasting high-density lipoprotein cholesterol (HDL-C) and homeostatic model assessment of insulin sensitivity showed a significantly lower mean whereas body mass index (BMI), waist circumference, sys-tolic blood pressure (SBP), diastolic blood pressure (DBP), fasting blood sugar , insulin, total cholesterol (TC), LDL cholesterol, very-low-density lipoprotein cholesterol, triglycerides (TG), cholesterol to HDL-C ratio, TG to HDL-C ratio, homeostatic model assessment of insulin resistance, visceral adiposity index, lipid accumulation product and therefore the product of TG and glucose showed a significantly higher mean within the presence of MetS. Reduced HDL-C appeared because the most frequent and hypertriglyceridemia because the least frequent component of MetS whereas clustering of reduced HDL-C + abdominal obesity (AO) + hyperglycemia appeared as the most prevalent combination of MetS components. Moreover, BDNF rs6265 showed BMI and gender independent association with increased risk of MetS in Pakistani individuals whereas MC4R rs17782313 showed BMI and gender dependent association with increased risk of MetS in Pakistani females. In addition, BDNF rs6265 and MC4R rs17782313 showed gender-dependent associations with decreased risk of getting low HDL-C in males and increased risk of getting abdominal obesity in females, respectively. However, no association was observed for metabolic variables aside from components of MetS across genotypes of both BDNF rs6265 and MC4R rs17782313. Genomic DNA was prepared using Genomix (Talent Srl, Trieste, Italy) from blood samples collected from each subject. We constructed Invader probes (Third Wave Technologies, Madison, WI, USA) for rs3101366 and rs2815752 in the neuronal growth regulator 1 (NEGR1) gene; rs6548238 and rs4854344 in the TMEM18 gene; rs10938397 in the glucosamine-6-phosphate deaminase 2 (GNPDA2) gene; rs4074134, rs4923461, rs925946 and rs6265

in the brain-derived neurotrophic factor (BDNF) gene; rs10838738 in the mitochondrial carrier homolog 2 (MTCH2) gene; rs8049439, rs4788102 and rs7498665 in the SH2B adaptor protein 1 (SH2B1) gene; rs1424233 in the v-maf musculoaponeurotic fibrosarcoma oncogene homolog (MAF) gene; rs1805081 in the Niemann-Pick disease, type C1 (NPC1) gene; rs17782313 within the melanocortin 4 receptor (MC4R) gene; and rs29941 and rs11084753 within the potassium channel tetramerisation domain containing 15 (KCTD15) gene. The chitinases of the above-mentioned organisms play important physiological and ecological roles.The latter enzymes inhibit fungal growth by hydrolyzing the chitin present in the fungal cell wall. Antifungal proteins like chitinases are of great biotechnological interest due to their potential use as food and seed preservative agents and for engineering plants for resistance to phytopathogenic fungi. 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 very best dilution of the soil suspensions were selected for isolation of bacteria. Screening of chitinolytic bacteria isolates was administered by spread inocula of every colony on plates containing a minimal salt medium with colloidal chitin as a sole carbon and energy source.