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## Autophagy related gene 5 (rs17587319) variants in asthmatic patients in north Indian population

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Asthma, a complex genetic disease is characterized by airway hyper-responsiveness to a variety of stimuli and airway inflammation. Autophagy Related Gene 5 (ATG5) plays an important role in autophagy pathway and genetic polymorphisms in this gene have been shown to associate with asthma in different populations. The goal of this study was to look for association between single nucleotide polymorphism (rs17587319 C/G) of ATG5 and asthma in North Indian population. For this, a case-control study including 94 asthmatic patients and 50 healthy controls was conducted. The genotypes frequencies were determined using Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP). The genotype frequencies of rs17587319 in asthmatic patients were CC, 91.49% (n=86); CG, 8.51% (n=8) and GG, 0% (n=0) with allele frequencies of C, 0.96 and G, 0.04. The genotypes frequencies in control group were CC, 96% (n=48); CG, 4% (n=2) and GG, 0% (n=0) with allele frequencies of C, 0.98 (98%) and G 0.02 (2%). The genotype frequencies were in Hardy Weinberg equilibrium (P=0.8853) in control group. Genotyping of additional control samples is in progress. We found no significant association of ATG5 polymorphism (rs17587319) with increased asthma risk (OR = 2.1778, 95% CI=0.4536-10.4566, P = 0.3309). These results indicate that ATG5 (rs17587319 C/G) does not predispose individuals to asthma in the north Indian population.

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## Development of hydroxyapatite based modified integrated orbital implant with superior motility

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Post Enucleation Socket Syndrome (PESS) which exhibits through anophthalmic appearance with a retraction or ptosis of the upper eye-lid and orbital floor fracture are very common post-operative problems after enucleation/evisceration surgery. Use of hydroxyapatite (HAp) as an implant was initiated due to its non-toxicity, biocompatibility and non-allergenic nature of this bioactive material. In the present investigation, HAp powder was synthesized through simple wet chemistry by using Ca(OH)2 and $H_3PO_4$ as reactants with Ca/P molar ratio 1.67 and subsequently turned to the desired shape and size of the orbital implant using CNC. After critically drying, these are finally sintered at 1250o C for 2 hours with sufficient mechanical strength. The samples prepared by the same method as stated were tested for different physico-chemical, mechanical and biological properties. Physico-chemical characterization include chemical analysis, XRD, XRF, FTIR, microstructure by SEM, detailed porosity, pore size distribution and micro CT, while mechanical and biological characterization include determination of compressive strength and assessment by MTT assay using NIH 3T3 (mouse fibroblast) cell line. It was found that phase-wise this is purely hydroxyapatite (HAp) with about 16-20 nm (a-axis) and 22-30 nm (c-axis) average crystallite size and 87-90% crystallinity. There was no other phases present. FTIR confirmed the characteristics functional groups of HAp. The median pore sizes of these samples were found between 1-90 µm. From the micro CT data, we found uniform networked and interconnected pores which are desirable for soft tissue invasion. We can also see the interconnected porous structure from SEM images. MTT assay assured the non-toxic nature of the samples. Thus the results show that spherical implants have been made which can be used as an eyeball implant with superior motility.

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