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Role of UCP1 and UCP2 gene polymorphisms in presbycusis

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Presbycusis is one of the most prevalent multifactorial disorders of the auditory system that leads to hearing impairment at an elderly age due to extrinsic and intrinsic damage caused by oxidative stress and mitochondrial dysfunction. Uncoupling proteins (UCPs) are the important carrier proteins which facilitate the transfer of anions, thereby control the mitochondria-derived reactive oxygen species (ROS). The present study has been conducted to find the association of *UCP1 A (-3826)G (rs1800592)* and *UCP2 G(−866)*A *(rs659366)* single nucleotide polymorphisms (SNPs) with age related hearing loss in South Indian population. A total of 220 subjects along with age and sex matched controls (n=270) visiting MAA ENT Hospitals, Hyderabad, India were considered for the study. Detailed questionnaire was collected and medical examinations were conducted on all the patients. *UCP1 A(-3826)G* and *UCP2 G(−866)*A gene polymorphisms was assessed by polymerase chain reaction and restriction fragment length polymorphism (PCR-RFLP). Statistical analysis such as χ^2 test and binary logistic regression analysis were performed using Statistical Package for the Social Sciences, PASW STATISTICS 18.0 software (SPSS Inc., Chicago, IL, USA). A significant association of *UCP2 G(−866)*A polymorphism (p-value < 0.001) with onset of presbycusis while *UCP1 A(-3826)G* (p-value = 0.545) exhibited no association. The prevalence of heterozygous (GA) and homozygous (AA) genotype of UCP2-866 G/A occurred at higher frequency (58.6%, 19.1% respectively) compared to controls (34.4%, 7.8% respectively). The present study indicated significant association of 'A' allele of *UCP2 (-866)* (OR=2.82; 95% CI=2.15-3.69; p-value<0.001) with the onset of presbycusis in South Indian population.

Biography

Manche Santoshi Kumari is pursuing her PhD from Osmania University and is a research scholar of Institute of Genetics and Hospital for Genetic Diseases. She is currently working as scientist in MAA Research Foundation, Somajiguda, Hyderabad, India

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