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A genomic approach to histamine function

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Histamine is an ancestral biogenic amine present in many living tissues as a normal constituent of the body with multiple effects in several organs of mammals and invertebrates. Histamine exerts its effects on target cells through 4 different types of receptors: H1, H2, H3 and H4. Genetic variation in histamine receptors and histamine synthesizing and metabolizing enzymes is associated with differences in histamine metabolism, altered enzyme activities and risk of disease. To advance in the knowledge of histamine genomics, we analyzed 3 genetic polymorphisms in the H1 receptor gene (*rs901865*), the H2 receptor gene (*rs2067474*) and the HNMT gene (*rs11558538*) in 195 patients, to establish a potential association between these polymorphisms and blood histamine levels, serum levels of Igs, PCR-us, TNF and several ILs, as well as blood cells count. The results showed an association with serum TNF levels and monocyte count for the *HRH1* gene polymorphism. Subjects with genotype GG have increased serum TNF and monocyte count comparing with subjects with genotype GA+AA. There are more subjects with abnormal serum TNF levels and genotype GG, than with genotype GA+AA. The *HRH2* gene polymorphism is associated with pathological PCR-us levels. Subjects with genotype GA presented abnormal values of serum PCR-us comparing to subjects with genotype GG. The HNMT polymorphism showed an association with serum IL8 levels. Individuals with genotype CC have increased levels of IL8 in comparison with individuals with genotype CT. The results of this study indicate that HA-related polymorphisms participate in the modulation of the immune-inflammatory response.

Biography

Lucia Fernandez-Novoa was graduated in Medicine and Surgery at Santiago University Medical School, Santiago de Compostela. She subsequently obtained a Post-doctoral Fellowship at the Biochemistry and Biophysics Department, School of Medicine, University of Pennsylvania, USA, in where she researched the biochemistry of brain neurotransmission. She was granted a Fellowship by the Ministry of Education and Science and carried out her research work at the Human Physiology Department of the Complutense University Medical School. She has joined the EuroEspes group in 1995 and has been Head of the Department of Molecular Genetics since 1998. She has written and participated in numerous research publications in the field of the genetics of neurodegerative disorders. She has taken part in numerous basic and clinical research projects concerning principally Alzheimer's disease. Her scientific work over the years has concentrated on the field of neurodegeneration from both the genetic and physiopathologic points of view.

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