

February 19-20, 2018
Paris, France

Katrina Hutchinson, J Org Inorg Chem 2018, Volume: 4
DOI: 10.21767/2472-1123-C1-002

A SOURCE OF NEW DIAGNOSTIC TECHNIQUES FOR ASTHMA

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Epidemiological studies have linked asthma with vitamin D deficiency (VDD). Asthma, like VDD, is highly prevalent in Ireland. Vitamin D receptor (VDR) gene polymorphisms have been associated with asthma and allergy susceptibility. The objective of this project is to set up new biochemical methods in a clinical laboratory for diagnosing and treating asthma, and to deepen our knowledge of the illness's pathophysiology. We successfully completed verification of the total 25-hydroxyvitamin D (25OHD or $C_{27}H_{44}O_2$) assays on Abbott Architect. New tests for eosinophil cationic protein (ECP), IL10, IL17a, VDR, cathelicidin antimicrobial peptide (CAMP) and for 4 single nucleotide polymorphisms (SNPs) were employed for diagnostic and research testing. We found associations between vitamin D levels ($C_{27}H_{44}O_2$) and airway obstruction in adults' asthma and body mass index in healthy Irish adults. A negative association was recorded between 25OHD and IgE levels in paediatric patients. In general we observed no significant benefit of vitamin D supplementation in asthmatics. However improvement in asthma control was noticeable in some patients with specific genotypes. We showed an association of TaqI and Apal polymorphisms of the VDR gene with a susceptibility to asthma in Irish patients. Also, we demonstrated that paediatric patients with TC for TaqI, and CC and CT genotypes for Apal have a significantly low level of IL-10 and increased white blood cells (neutrophils in particular), and that they were associated with poor asthma control. Vitamin D's role in respiratory disorders has not yet been fully investigated. Research is still at an early stage, but our preliminary results seem encouraging. Further and more extensive studies, using a larger sample, will be necessary to confirm our findings, to examine links between vitamin D and VDR gene polymorphisms in specific asthma phenotypes, and to investigate the possibility of using VDR SNPs as biomarkers for susceptibility to asthma.

Biography

Katrina Hutchinson has a MD from Moscow State Medical University and she is currently completing her PhD in the School of Chemistry in the National University of Ireland, Galway. She has published several articles based on her research. Since 2000 she has been the Head of the Clinical Chemistry, Immunology, Serology and Molecular Biology departments at Eurofins-Biomnis, Ireland. She was short-listed by Enterprise Ireland for the Irish Scientist of the Year in 2013, and she has been an active participant in national and international conferences relating to Clinical Chemistry, Endocrinology and Immunology.

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