

TITLE

**Butyrylcholinesterase
and metabolic
syndrome**

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Background: Butyrylcholinesterase (BChE) was the first protein identified to have genetic variants; it led to the birth of pharmacogenetics. Over the ensuing decades the physiological functions of BChE were evaluated to establish its place in the network of biochemical processes. Many leads were obtained but none was definitive. Following the human genome sequencing, genomic approaches were applied to understand its phylogeny and possible role in physio-pathological processes. We go further in employing data obtained in the post-genomic era to look at ways in which the protein fits in the process of systems biology

Methods: A number of butyrylcholinesterase variants were identified with details of nucleotide/ amino-acid alterations. We compared the pattern of alterations and relate them to the native protein to get a picture of the member components in changed biological function.

Observations: Variants BChE. The silencing phenotypes are characterized by a reduction of between 90-100% in enzymatic activity. Are very rare in the general population and show genetic heterogeneity. From the Esther Database we identified a total of 142 mutant forms of the enzyme. There were 55 natural mutants (19 were functional and 36 were silent), 86 site-directed mutants and four were both. Sixteen could not be assigned to either natural or site-directed. We evaluated the pattern of mutation in terms of the protein site and functional status

Conclusion: We believe this process can be considered for application to other protein sequences of as yet unknown roles.

Biography

Dr. G.R Sridhar is the Director of Endocrine and Diabetes Centre, and an Adjunct Professor, Bioinformatics, Andhra University College of Engineering, Visakhapatnam, India. He is the President of Research Society for the Study of Diabetes in India (RSSDI, 2010) and was founder Editor, Indian Journal of Endocrinology and Metabolism. A Fellow of American College of Endocrinology and of Madras Science Foundation, he delivered orations at the Endocrine Society of India (2008), the RSSDI (2007), and Association of Physicians of India (2002). His major areas of research are in clinical informatics, computational biology, bioinformatics and psychosocial aspects of diabetes.