Mohammed Farhan Katheem et al., J Diabetes Metab 2015, 6:11
http://dx.doi.org/10.4172/2155-6156.C1.039

OMICS International
conferenceseries.com

7th Indo Global Diabetes Summit and Medicare Expo

November 23-25, 2015 Bengaluru, India

Development of innovative technologies to detect long-term diabetes using human toe-nail by vibrational spectroscopy

Mohammed Farhan Katheem[1], **Mazher Sultana**[2], **Aashish Parekh**[3], **T P Sastry**[1] and **A B Mandal**[1]
[1]Central Leather Research Institute, India
[2]Presidency College, India
[3]Institute of Nephro Urology, India

Background: Diabetes mellitus is a fastest growing non communicable disease in India. The bio-molecule, protein is mainly affected by diabetic condition due to presence of reactive functional groups results in glycation and aggregation. The human nail plate act as shield and it gives protection to human body and composed of hard α–keratin, which is the substance forming stratum corneum. Acceptable differences in infrared (IR) spectra of diabetic (D), prone to diabetic (PD) and non-diabetes (ND), human toe-nail specimens were investigated in this study.

Methods: Both male and female subjects' toenail specimens with different age group were recruited. The different groups' nails were studied by using Perkin Elmer Fourier Transform Infra Red (FTIR) spectrometer data were correlated with clinical investigations.

Results: The toe nail of D & ND were studied extensively had shown amide I, II and III bands are observed with slight shifting with reference to age groups and duration of diabetes. The amide III bands are present in both D & ND but the alkylthiolated bands still only present in diabetic patients. Clinical results have shown difference in all three group subjects.

Conclusion: The protein in the nails of D contains α-helical structure, including the presence of amide II bonds where as it is absent in ND. In D & ND toe nails are showing more or less same results for amide I, II & III. The alkyl thiolation is unique in chronic diabetic patients in toe nail too. It is helpful in screening diabetes for long-term basis in chronic diabetic patients with reference to their toe nail growth. The PD data gave important clues between D & ND groups.

Biography

Mohammed Farhan Katheem received MSc in Advanced Biochemistry in 2007 from Thiruvalluvar University and worked as a Research Fellow at Genewin Biotech company, Hosur, TN (2007-2008). Later he joined as Research Assistant (2008-2011) with Dr.T.P.Sastry, Sr. Principal Scientist and Head of the Department, Bioproducts Laboratory. He was awarded CSIR-Senior Research Fellowship and joined the same from 2012 to till date under the guidance of Dr. A. B. Mandal, Director i/c, CSIR-CLRI and working at Bioproducts Laboratory. He has published 7 papers in national and international journals of repute and has credit of 2 patents, which was commercialized to Indian companies. He has presented more than 10 papers and posters together in international and national conferences. He is currently undergoing research in the field of biomaterials and diabetes detection using non-invasive diagnostic technique by vibrational spectroscopy and its clinical correlation in biomedical applications.

farhan_clri@hotmail.com

Notes: