Nikita Naicker, J Diabetes Metab 2017, 8:1(Suppl)
http://dx.doi.org/10.4172/2155-6156.C1.064

The effect of fenugreek seed extract and its active compound on NRF2-SIRT3 mediated antioxidant response, under a hyperglycemic condition

Nikita Naicker
University of KwaZulu-Natal, South Africa

Presently, type 2 diabetes mellitus (T2DM) is related to both impaired insulin action at specific tissues and impaired insulin release. A deficiency at these levels is an early occurrence in the disorder and evidence proposes that mitochondria play an imperative role in both these processes. During the progression of T2DM, mitochondrial biogenesis is also impaired. As a result, there is a reduction in the number of mitochondria and reduced capacity for oxidative phosphorylation in a diabetic state. This study evaluated the effect of fenugreek seed extract (FSE), 4-hydroxyisoleucine (4-OH-lle), metformin (MF) and insulin on the SIRT3-NRF2 mediated antioxidant mechanism, under a normo- and hyperglycemic condition in human hepatoma cells at 72 hours. Markers for mitochondrial function and biogenesis, oxidative stress parameters and antioxidant response were evaluated by spectrophotometric assays and Western blotting. We found that FSE, 4-OH-lle and MF increased GSH levels and reduced lipid peroxidation and protein carbonyl levels, under both conditions, while, mitochondrial biogenesis and antioxidant response markers were significantly elevated by FSE and 4-OH-lle, under both conditions. This data has provided evidence for an *in vivo* model. Data from this study suggests that FSE and its active compound 4-OH-lle, in comparison to metformin and insulin may play an active role in improving mitochondrial biogenesis during diabetes. As a result, there will be an increase in the number of mitochondria. Therefore, fenugreek displays its possible potential as a reliable, cost effective, herbal therapeutic alternative to the current diabetic treatment regime.

Biography

Nikita Naicker has completed her Master's degree in Medical Science from the University of KwaZulu-Natal in 2014. She is currently doing her PhD in Medical Biochemistry from the University of KwaZulu-Natal. She has three publications in reputed journals and manuscripts in review.

nikita.naicker@gmail.com

Notes: