

Genomic medicine and acute cardiovascular disease progression in diabetes



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Editorial

Health promotion and prevention of disease has now become of major interest to the scientific and medical community with genomic medicine now important to modern medicine [1]. Nutritional genomics [2] allows the use of nutrition research to determine nutritional interventions that enables gene expression that improves the health and wellbeing of individuals in the community. The future of science and medicine in disease progression in diabetes is now dependent on nutritional genomics that involve the anti-aging genes [3] that are essential to prevent insulin resistance, circadian dysynchrony, hyperlipidemia, acute cardiovascular disease, nonalcoholic fatty

liver disease (NAFLD) and neurodegenerative diseases. The anti-aging gene Sirtuin 1 (Sirt 1) is now important to the prevention of chronic disease [4-6] with its critical involvement in the immune system that involves toxic immune reactions [7-9] connected to the acceleration of various organ diseases (FIGURE 1) with relevance to disease progression in diabetes in various communities [10,11].

Sirt 1 defects in diabetes now provide Sirt 1 as a gene associated with multi-organ gene regulatory influences [12] with molecular targets relevant to the development of immune dysfunction, organ diseases and the metabolic syndrome. Sirt 1 is nicotinamide adenine dinucleotide (NAD⁺) dependent class III histone deacetylase (HDAC)

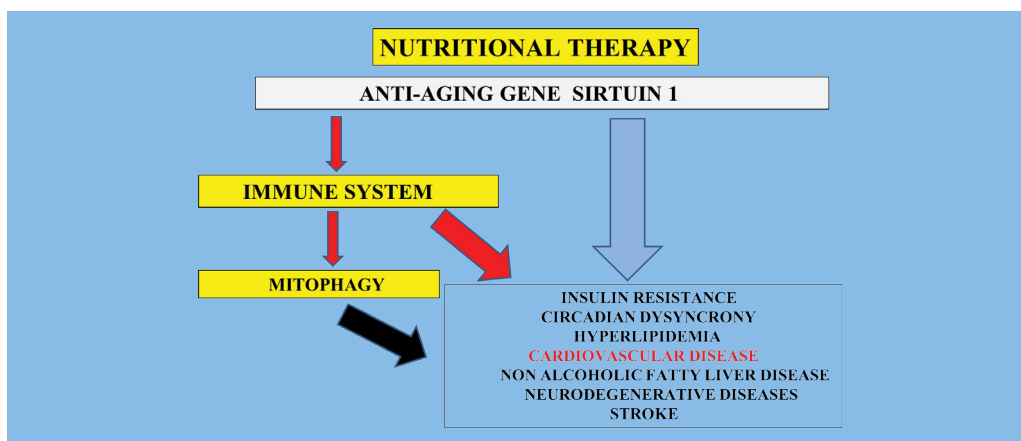


Figure 1: Nutritional therapy that involves regulation of the calorie sensitive gene Sirt 1 is important to prevent immune system imbalances and mitophagy with relevance cardiovascular disease, NAFLD and diabetes. Nutritional genomics is important for Sirt 1 expression to prevent toxic immune reactions that trigger acute cardiovascular disease in diabetes.

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KEYWORDS

- genomic medicine
- acute cardiovascular disease
- immune system
- Sirtuin 1
- heat shock protein
- nutritional therapy
- mitophagy
- NAFLD
- diabetes

and its regulation of the immune system is critical to the prevention of mitophagy with connections of Sirt 1 that target transcription factors such as p53 to adapt gene expression to the immune system, metabolic activity with deacetylation of nuclear receptors associated with insulin resistance [5]. Sirt 1 expression can be altered by micro RNA (mi-34a, mi-132 and mi-122) that determine p53 effects on Sirt 1 expression with relevance to insulin resistance, cardiovascular disease and metabolic disease [5].

The causes of the global burden of cardiovascular disease has become of major concern to various regions in the world [13]. Nutrition and genomic medicine in diabetes are essential to maintain insulin therapy and of crucial importance to cardiovascular disease and to the prevention of toxic immune reactions [14,15]. Sirt 1 repression with uncontrolled toxic immune reactions [7-9] and mitophagy should now be included in immune mediated inflammatory cardiovascular diseases [16,17] with relevance to the trigger of cardiovascular disease progression in diabetes (FIGURE 1). Multi-organ disease now involves Sirt 1 repression and mitophagy [5,6,18,19] connected to climate and pollution alterations that trigger acute myocardial infarction or cardiac arrhythmias [20-22]. Sirt 1 repression is related to defective heat shock protein 70 (HSP 70) metabolism with Sirt 1 now referred to as the heat shock gene [23,24]. HSP 70 is important to mitochondrial apoptosis and autoimmune disease [25,26] with elevated HSPs in man connected to cardiovascular disease [27,28]. Heat therapy in diabetics [29] should be carefully controlled with core brain temperature alterations that may lead to complete inactivation of nutritional Sirt 1 genomics with relevance to immune reactions, acute cardiovascular disease and NAFLD.

Nutritional interventions [30] to activate Sirt 1 are essential in the treatment of insulin resistance and the prevention of multiple organ disease in diabetes [31]. The involvement of nutrition

and the immune system has become important to nutritional genomics with mitophagy in neurons of critical concern to maintain neuron lifespan relevant to global cardiovascular disease, chronic metabolic and neurodegenerative diseases [32]. Sirt 1 inhibitors such as bacterial lipopolysaccharides have become relevant to disease progression in diabetes [33] with Sirt 1 repression associated with autoimmunity, NAFLD and insulin resistance [34]. Nutritional genomics with relevance to science and medicine requires the assessment of caffeine as a trigger for acute cardiovascular disease [35]. Caffeine is a Sirt 1 modulator [36] and its role in the induction of Type 3 diabetes is linked mitophagy and NAFLD [37,38]. Dietary fat (gm/day) intake determines caffeine metabolism [39] with relevance to the use of Sirt 1 activators [37,40] in genomic and nutritional medicine in the prevention of acute cardiovascular disease in diabetic.

Conclusion

Nutritional genomics and regulation of Sirt 1 has become important to the treatment of diabetes and the progression of various organ diseases. Sirt 1 inactivation by heat/cold stress interrupts HSPs metabolism connected to defective immunometabolism and mitophagy. Science and medicine and its relevance to genomic medicine needs to consider Sirt 1 gene expression with its relevance to diabetes and accelerated immune reactions that cause acute cardiovascular disease. Factors such as caffeine, body temperature and pollution need to be considered as the trigger for acute cardiovascular disease associated with the progression of NAFLD and diabetes.

Acknowledgements

This work was supported by grants from Edith Cowan University, the McCusker Alzheimer's Research Foundation and the National Health and Medical Research Council.

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