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Evaluation of free radical scavenging capacity of improved hybrids of thiosemicarbazone-triazole and their influence on glucose metabolism: Relevance to the management of diabetes mellitus**Ademola Ayeleso and Mukwevho E**
North West University, South Africa

Diabetes mellitus is a metabolic disease in which the body is unable to produce or respond to the insulin produced and leads to abnormal metabolism of carbohydrates and elevated levels of glucose in the blood. It is a major health problem not only in urban, but also in the rural areas. Oxidative stress, an imbalance between the production of free radicals and body antioxidant system has been implicated in the pathogenesis of diabetes. Free radicals attack important macromolecules leading to cell damage. Antioxidants are intimately involved in the prevention of damage caused by free radicals. The anti-diabetic effects of hybrid compounds (2a-h) of thiosemicarbazone and triazole containing methoxy groups at C(4) positions were tested against genes involved in glucose metabolism (*GLUT-4*, *MEF2A* and *NRF-1*) using quantitative real time PCR (qPCR). Free radical scavenging capacity (FRAP, TEAC and DPPH) of the hybrids was also carried out by using established techniques. From the results, 2b and 2h showed more pronounced effects in the up-regulation of the diabetes associated genes. The addition of methoxy group as an improvement to the previously synthesized compounds could be a reason for the expression of the genes, thereby enhancing glucose transport. All the hybrid compounds showed free radical scavenging abilities. In conclusion, hybrid compounds (2b and 2h) can be useful as potential drugs for the management of diabetes mellitus.

ademola.ayeleso@gmail.com

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