

# DIABETES AND DIABETIC NURSING CARE

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## Adiponectin regulation of *AMPK* on oleanolic acid treated Sprague Dawley rats

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*AMPK* is known to control both glucose and lipid metabolism, two main candidates critical in the development of type-2 diabetes (T2D). Studies have shown that *AMPK* can be activated by adiponectin. Patients suffering from T2D are known to have low adiponectin concentration in their blood plasma. In this study, we have assessed one of the anti-diabetic compound Oleanolic acid (OA) if it could produce desirable effect in upregulating adiponectin concentration and the subsequent regulation of *AMPK*. Sprague Dawley rats were fed with high fructose diet (HFD) to induce T2D, and the rats that developed insulin resistance were considered as diseased, they were then treated with OA. Analysis of adiponectin concentration in blood plasma was done, *AMPK* gene expression and subsequent genes that play vital role in glucose and lipid metabolism (*GLUT-4* and *CPT-1*) in skeletal muscle tissue was also performed. The results showed 1.19-fold increase in blood plasma adiponectin concentration after OA administration. Furthermore *AMPK* gene expression showed 3.98-fold increase and *GLUT-4* gene expression was increased with 1.5-fold whereas *CTP-1* gene expression was increased with 1.59-fold. These results clearly indicate that OA produced good effects in ameliorating insulin resistance since it could upregulate all the genes and adiponectin concentration which are well known to be abnormally suppressed in a situation of T2D. In conclusion, these studies further confirm that OA can be used as an effective therapeutic agent to ameliorate T2D and these studies also suggest that OA's mechanism of action it could be through *AMPK* pathway.

### Biography

Emmanuel Mukwevho is a Professor of Biochemistry at the school of Chemical and Physical Sciences, at the NWU in South Africa. He has graduated for his PhD from University of Cape Town in June, 2010. He teaches Biochemistry in both undergraduate and postgraduate, especially Metabolism and Analytical Biochemistry. He has also obtained Certificates in Project Management and in Financial Management from UCT both in 2012. He is currently registered for MBA with NWU Graduate Business School.

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