



Ms. Kim Archer PhD Pharmacology

BIOGRAPHY

Kim Archer was born in Barbados on April 5th, 1983. In 2005, she graduated from the University of the West Indies, Cave Hill Campus with an upper second class honours in a Bachelor of Science degree in both Chemistry and Mathematics. In 2006, she graduated from Newcastle University, United Kingdom, with a Masters of Science degree in Drug Chemistry. She is a chemist by training and a proud mother of a 9 year old son. She is currently enrolled at the University of the West Indies, Cave Hill Campus in the Faculty of Medical Sciences undertaking a Doctor of Philosophy in Pharmacology.

Screening of Potential Anti-Diabetic Properties of Barbadian Folklore from Medicinal Plants Using Non-conventional and Conventional Drug Targets

PhD Pharmacology: Ms. Kim Archer

Abstract

Type 2 diabetes can be described as the body's ineffective use of insulin and it accounts for at least 90% of all diabetic cases. This condition is a multifactorial disease and requires multiple therapeutic approaches, which can lead to prominent irreversible side effects. There are many known classes of drugs for the management of Type 2 diabetes. However, Metformin is used as the oral hypoglycaemic drug of choice for managing the condition. Finding alternative treatments from the plant kingdom is a very viable option. *Mormordica charantia* (cerasee), *Phyllanthus niruri* (seed under leaf) and *Catharanthus roseus* (periwinkle) are all locally grown plants that have been reported anecdotally to exhibit anti-diabetic properties. Their effects on enzymatic drug targets (dipeptidyl peptidase 4 and protein tyrosine phosphatase) to produce better efficacy and safety profiles are being explored. This study incorporates a three-phase drug discovery and preclinical development process to explore potential herbs for the treatment of Type 2 diabetes. Phase 1 includes the collection and extraction of bioactive compounds from the plants. Phase 2 is the *in vitro* analysis of the extracts on the respective drug targets and it also includes activity guided purification of the bioactive compounds from the extracts.

Screening of Potential Anti-Diabetic Properties of Barbadian Folklore from Medicinal Plants Using Non-conventional and Conventional Drug Targets

PhD Pharmacology: Ms. Kim Archer

Abstract (Cont'd)

Phase 3 is the experimental *in vivo* analysis, which includes inducing Type 2 diabetes in Sprague-Dawley rats, using a high-fat diet and low dose injection of streptozotocin and treating the rats with the test substances. Phase 1 and 2 preliminary data will be used to determine which drug target and plant extract will be used to conduct phase 3. Signalling pathways associated with the effect of the extract on the blood glucose levels and the toxicological effects of the extracts will also be analysed. All phases of the study will be carried out in the Faculty of Medical Sciences' research laboratory at the University of the West Indies, Cave Hill Campus. However, identification of compounds in the active fraction(s) will be outsourced. It is anticipated that findings from this study will be used to validate the folklore use of the plants in the management of diabetes. It will also potentially provide better therapeutic options to manage the multifactorial disease.