



Biocompatible Silver Nanoparticles synthesized from *Andrographis echiooides* and its Antioxidant and Antidiabetic effects on STZ induced Diabetic Rats

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Abstract: Diabetes mellitus is a chronic metabolic disorder characterized by complete or relative lack of insulin, or insulin resistance. Metal nanoparticles preparation using plant is an important branch of biosynthesis processes. *Andrographis echiooides* (L.) Nees. (Family: Acanthaceae), also known as *Indoneesiella echiooides* (L.) which is commonly known as false water willow. Various biochemical Parameters, Enzymic and non-enzymic antioxidants were analyzed in the liver, kidney, pancreas as per the standard procedures. Administration of AgNPs - hydroalcoholic extract of *A. echiooides* (AgNPs- HEAE) significantly lowers the blood glucose level, gluconeogenic enzymes such as glucose-6-phosphatase and fructose-1, 6-bisphosphatase whereas increases the activities of hexokinase, glucose-6 phosphatase dehydrogenase and GSH via by increasing level of insulin. AgNPs- HEAE reduces the total cholesterol and triglycerides, decreases the LDL-C, VLDL-C and it considerably increase the level of HDL-C. In plasma and tissues i.e. liver, kidney, pancreas, AgNPs- HEAE increased catalase activity and GSH level and decreased lipid peroxidation, and increases the enzymatic and non enzymatic antioxidants levels. Furthermore, the histological damages in pancreas, liver and kidney tissues were reduced. These results indicated a good hypoglycemic and antioxidant activity of AgNPs- HEAE. The overall results are suggestive that AgNPs - hydroalcoholic extract of *A. echiooides* act as efficient free radical scavenger intercept those radicals which are involved in drug metabolism by microsomal enzymes. To best of our knowledge this is the first report of green synthesis of AgNPs- HEAE antioxidant and antidiabetic properties.

Keywords: Oxidative stress; Silver Nanoparticles (AgNps); Biochemical estimations *Andrographis echiooides*; Histopathology.

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