Comparative Study of Invitro Antidiabetic Activities of Crude and Mgonps-*Abrus Precatorius* Methanol Leave Extract.

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Introduction

Diabetes Mellitus (DM) is a chronic, progressive metabolic disorder characterized by persistent hyperglycemia, arising from defects in insulin secretion, insulin action, or both. Affecting millions globally, DM is a significant public health challenge contributing to high morbidity and mortality rates. Worldwide, it is estimated that 240 million individuals live with undiagnosed diabetes. Developing an effective diabetes management strategy is a typical challenge. Several drugs aimed at fighting diabetes and lowering blood sugar levels, such as sulfonylureas and biguanides, fail to provide long-term diabetes control. Furthermore, extended use of these medicines causes toxicity and undesirable side effects such as gastrointestinal pain, hypoglycemia, pancreatic degradation, and liver damage. The search for new hypoglycemic drugs and agents with fewer side effects and higher efficacy to keep blood glucose levels within the acceptable range of 70-140 mg/dL is a worthwhile endeavour. MgO is used in medicine to treat a variety of diseases, including heartburn and aching stomach, by acting as an antacid. Therefore, it would be helpful to produce biocompatible magnesium oxide nanoparticles (MgONPs) utilizing green chemical approaches from a medical standpoint.

Materials and methods/Methodology.

The study compares the antidiabetic effects of MagnessiumOxide nanoparticles (MgONPs) and crude *Abrus precatorius* leaf extract. The MgONPssynthesized from*A.precatorius*was characterized and confirmed by using the FTIR technique to identify compounds, SEMto confirm the surface morphology of the synthesized nanoparticleand UV-visible analysis for qualitative and quantitative analysis, while antidiabetic activity was determined by assessing the activities of alpha-amylase and alpha-glucosidase enzymes.

Results and discussion

The FTIR result confirmed the presence of functional groups such as C-H of methyl groups, the CH_2 group, the –OH vibration of alcohols.The alpha-amylase activities showed that the MgONPs -*A.precatorius* methanol leaf extract has higher activity when compared to the crude extract with IC50 values of30.1and 58.61µg/ml, respectively. Similarly, alpha-glucosidase activities also show that MgONPs-*A.precatorius* leaf extract have higher activity when compared to the crude extract with IC50 values of 30.7 and 57.68 µg/ml, respectively. The results showed thatMgONPs of *A.precatorius* leaf extract has better antidiabetic potential than the crude extracthence, it could be used to develop natural drugs that may be used in diabetes treatment.

Conclusions

It was concluded that the crude leaf extracts of *Abrus precatorius*and biosynthesized MgONPpossess potent anti-diabetic activities against alpha-amylase and alpha-glucosidase in a dose-dependent manner, hence the biosynthesized MgO-*Abrus precatorius*nanoparticle extract possess more inhibitory activity and antidiabetic property.Further research, including in vivo studies, have to be conducted to determine the effects of this plant on organs and tissues and to improve potential treatments for oxidative stress.

Keywords: Diabetics, Magnesium Oxide Nanoparticles, *Abrusprecatorius*, Enzyme