

# **Polyherbal therapy by *Heritiera fomes* and *Sonneratia apetala* leaf extracts shows antidiabetic action: *In vivo* study**

**Bidduth Kumar Sarkar**<sup>1\*</sup>, Ahmed Shohrawar Mahadi<sup>2</sup>, Rahima Akter<sup>3</sup>, Farzana Afrose<sup>2</sup>, Prema Modak<sup>4</sup>, Arghya Prosun Sarkar<sup>5</sup>, Fatema Akter<sup>1</sup>, Anita Rani Chowdhury<sup>6</sup> and Sukalyan Kumar Kundu<sup>4</sup>

<sup>1</sup>Bangladesh Reference Institute for Chemical Measurements, Dhaka, Bangladesh

<sup>2</sup>Popular Pharmaceuticals Ltd., Dhaka, Bangladesh

<sup>3</sup>Department of Pharmacy, World University of Bangladesh, Dhaka, Bangladesh

<sup>4</sup>Department of Pharmacy, Jahangirnagar University, Savar, Dhaka, Bangladesh

<sup>5</sup>Department of Pharmacy, Islamic University, Kushtia, Bangladesh

<sup>6</sup>Department of Pharmacy, Jagannath University, Dhaka, Bangladesh

\*Corresponding author email: [kumarsarkar1229@gmail.com](mailto:kumarsarkar1229@gmail.com)

This study aimed to investigate antidiabetic activity of methanolic leaf extract combination of two mangrove plants *Heritiera fomes* and *Sonneratia apetala*, because polyherbal therapy is claimed to produce better therapeutic efficacy with minimum side effects. For *in vivo* study, Thirty male Sprague Dawley rats were induced diabetes by intraperitoneal administration of Alloxan monohydrate at a single dose of 150 mg/kg body weight. These diabetic rats were grouped as Com 250, Com 500, Met, Gbn and Diabetic control keeping 6 rats in each group. Com 250, Com 500 were given leaf extract combination of both plants at doses of 250 mg/kg (1:1) and 500 mg/kg (1:1) respectively orally once daily. Standard groups Met and Gbn were given single oral dose of 100 mg/kg Metformin HCl and 10 mg/kg of Glibenclamide respectively per day. Besides, Sixnon diabetic rats were kept as normal control group simultaneously. After intensive study of 21 days, the fasting blood glucose levels were found to be reduced by 44%, 37%, 55% and 0.68% for Com 250, Com 500, Gbn and Met groups respectively in comparison with their initial fasting blood glucose levels of 1<sup>st</sup> day of study. Other biochemical parameters like Liver Glycogen, Glycated Hemoglobin were also found to be better in the Com 250 and Com 500 groups than the diabetic control group. Primarily this combination can be claimed as an option for controlling hyperglycemia associated with diabetes. Further investigations are required to determine the specific mechanism of antidiabetic action of these extracts at the cellular level.