**ABSTRACT**

Background & Objectives: Cinnamomum cassia is commonly known as cinnamon. Scientific publications revealed that Cinnamomum cassia has anti-diabetic activity, but its influence in diabetic patients who are under treatment is not clear. Hence aim of this work is to find out the influence of hydroalcoholic stem bark extract of Cinnamomum cassia (HAECC) on anti-diabetic effect of Glibenclamide, Metformin alone and their combination. Methods: The influence of HAECC - 285.71, 666.66 mg/kg, Glibenclamide (1 mg/kg), Metformin (300 mg/kg) and their combinations (2-12 groups, n=6) were evaluated in alloxan induced diabetic rats (110 mg/kg, s.c.) by estimating fasting blood glucose levels on initial, 1st, 3rd, 7th, 14th and 21st day of the treatment. On 21st day rats were sacrificed blood and liver samples were collected and other parameters were estimated which are compared against diabetic control. Results:

Anti-hyperglycemic effect of HAECC - 285.71, 666.66 mg/kg is very significantly (p < 0.01) decreased in a dose-dependent manner. Combination therapy does not produce any synergistic effect but blood glucose level was very significantly (p < 0.01) reduced from 1st day, came to normal on 21st day of the treatment and further no hypoglycemic effect was observed. In addition, significant reduction was observed in cholesterol (27.1-47.4%), SGOT (38.8-63.6%), SGPT (7.6-40%) and glucose-6-phosphatase (33.6-66.3%) this indicates reduction in lipolysis and gluconeogenesis. Significant increase in protein (13.7-30.4%), HDL cholesterol (44.4-108.3%) and liver

glycogen (34.1-91.7%) were observed this indicates reduction in proteolysis and glycogenolysis in diabetic treated rats.

Conclusion: The HAECC has potential anti-diabetic action in alloxan induced diabetic rats. Combination of HAECC with anti-diabetic drugs does not produce any significant hypoglycaemic effects. Further studies are required by reducing the doses of Glibenclamide and Metformin to know better anti-hyperglycemic activity of HAECC.

**Key words:** HAECC, Metformin, Glibenclamide, diabetes and serum glucose.