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PHYTOCOMPOUNDS AS ANTIDIABETIC AND HEPATOPROTECTIVE AGENTS: THE PROMISING POTENTIALS OF *ACACIA ARABICA* (LAM.) WILLD FLORAL METHANOLIC EXTRACT

ALSANOUSI N [1,2]

1. Department of Basic Medical Sciences, College of Medicine, Prince Sattam bin Abdul Aziz University, Al-Kharj, Saudi Arabia
2. Department of Biochemistry, Faculty of Medicine, National University, Khartoum, Sudan

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ABSTRACT

Background: The oxidative stress related diabetes mellitus is a significant metabolic disorder that creates serious complication and also affecting million people globally resulting prolonged medication leads liver toxicity and drug resistance. Hence, to reduce the side effects of the existing drugs, compounds of natural origine with nom known side effects could be a promising alternative.

Materials and Methods: The present study analysed the antidiabetic, antioxidant and hepatoprotective properties of the methanolic Acacia arabica flower extract by α amylase activity inhibition assay, glucosidase activity inhibition assay, 2,2-diphenyl-1-picrylhydrazyl free radical scavenging assay, 2,2'-azino-bis (3-ethylbenzo-thiazoline-6-sulfonic acid scavenging assay, nitric oxide scavenging activity, hepatoprotective activity on HepG2 using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay etc.

Results: A. arabica flower extract (5 mg/ml) showed an ability to inhibit α-amylase and α-glucosidase enzymes by 77% and 75% respectively. The antioxidant properties of the extract were after treatment and revealed to be 84% of free radical's inhibition, 89% of 2,2'-azino-bis (3-ethylbenzo-thiazoline-6-sulfonic acid scavenging inhibition and also 85% of nitric oxide scavenging activity at 5 mg/ ml. The hepatoprotective effect was examined after treatment with A. arabica flower extract which revealed no toxicity to HepG2 cells.

Conclusion: A. arabica floral methanolic extract has found to have promising antidiabetic and hepatoprotective activities and the author recommend detailed phytochemical and in vivo investigations to develop it for its usage in the treatment of diabetes mellitus.

KEYWORDS: *A. arabica, oxidative stress, drug toxicity, α-amylase, α-glucosidase*

INTRODUCTION

The diabetes mellitus epidemic and their complication create a major threat to public health owing to diabetes mellitus prevalence increase and became sixth most important chronic metabolic disorder which cause severe injury and death [*Zaharia et al., 2019; Kalmatov et al., 2024*. The report from International Diabetes Federation Atlas 10th edition 2021 says, 537 million population

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ADDRESS FOR CORRESPONDENCE:
Nesreen Alsanousi, PhD, Asst. Professor,
Department of Basic Medical Sciences, College of Medicine,
Prince Sattam bin Abdul Aziz University, Al-Kharj, 11942, Saudi Arabia
Phone number: 00966558186176
E-mail: nesreen.alsanousi@gmail.com

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