Effect regular ingestion of Gum Arabic (Acacia Senegal) on the BMI and lipid profile; an intervention case control study

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Introduction
Gum Arabic is a safely consumable water soluble fiber which is used in food and drug industry. The beneficial effects of gum Arabic in renal disease, colon cancer and body weight management has been documented in many reports. Increasing the intake of water soluble fibers has long been recognized as dietary intervention in patient with obesity, DM, Hypertension and other conditions to decrease the complications of hyperlipidemia. Gum Arabic is known to bind to bile acids and decrease their absorption in the terminal ileum thereby decreasing lipid absorption and stimulating new bile acids synthesis by the liver which consumes cholesterol.

The study was conducted to evaluate the effectiveness of regular intake of an appreciable dose of Gum Arabic (Acacia Senegal) on body mass index (BMI) and the lipid profile in healthy individuals.

Methods
This study was an Intervention case control study. The study population was a total of 53 young and healthy females (age 17-21 years old) recruited by volunteering from the students of the Faculty of the Medicine, University of Khartoum, the volunteers were blindly and randomly allocated into two groups. An intervention group (n=32) and control group (n=21). Both groups were followed up for a period of 8 weeks. At both the start and end of the follow up period data was collected from volunteers, and that included measurements of starting and ending body weight; height; skin fold thickness and fasting blood samples for lipid profile analysis. Both groups had to follow their normal life style regarding for habits and daily activity. The intervention group had to consume 30 grams of gum Arabic (15g dissolved in 400 ml of water twice per day) on daily bases all through the follow up period. The study was ethically approved and all volunteers consented to participate.

Results
There was an observed reduction in the mean body weight and BMI in the study group and not in the control group but the difference before and after was not significant. On the other hand the intervention group showed a significant improvement of their lipid profile in the form of a significant reduction in serum cholesterol level (160.7 ±-25 to 106.7+-14, p < 0.001), triglyceride level (28.2 +- 21 to 52.3 + - 10, p= 00.02) and LDL level (118.9 + 24 to 72 + - 15, p < 0.001) and a significant increase in HDL Level (24.2 + 5 to 30+- 7, p < 0.001).

Conclusion
Regular ingestion of Gum Arabic improved the lipid profile of the study group by decreasing cholesterol and LDL levels and increasing the HDL level with minimal infrequent side effects in the form of GIT disturbance in the first few weeks. The possibility of using Gum Arabic as an effective dietary intervention to prevent complications of hyperlipidemia in risk groups such as Obese, diabetic and hypertensive patient is likely and should be investigated.