Study of Hypocholesterolemic and Antiatherosclerotic Properties of *Medicago sativa* L. Cultivated in Egypt

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ABSTRACT

Alfalfa was reported to be hypocholesterolemic and antiatherosclerotic. Saponin glycosides were suggested to be responsible for this activity by neutralizing cholesterol in the stomach, enabling it to be excreted from the body. This makes alfalfa superior to the current anti-cholesterol medications which act by blocking cholesterol synthesizing apparatus. This study was undertaken in an attempt to prepare an alfalfa extract with high saponin content and free or low content of other toxic constituents found in alfalfa (caravanine and coumestrol), which causes serious side effects. A patent process was used to render alfalfa toxin free and to produce a drug present in the international market. Our study is based on monitoring the Egyptian crop at two different localities for its saponin, caravanine and coumestrol contents at different growth stages. The study showed that the tested extract of the chosen stage to be biologically studied (hypocholesterolemic and antiatherosclerotic effects) on the basis of the highest saponin content was just before fruiting stage of the locality A. This stage was free from both, coumestrol and caravanine. The study proved that the Egyptian crop of alfalfa was found to safely reduce natural cholesterol and to possess a strong antiatherosclerotic activity. This extract (1) produced the most significant decrease in total cholesterol and LDL-cholesterol by 85.1 and 88%, respectively, of the corresponding levels in hypercholesterolemic rabbits. This decrease is more significant than that produced by gemfibrozil (73 and 74%) upon concomitant administration with a cholesterol enriched diet using the same animal model at the tested dose level. Also, it was obvious that all alfalfa preparations produced significant antioxidant properties. All alfalfa extracts possessed antiatherosclerotic activity as observed by the almost normalization of the aortic sections upon concomitant use of alfalfa extracts with cholesterol-enriched diet.

Key words: alfalfa, saponins, caravanine, coumestrol, cholesterol, LDL, hypercholesterolemia, atherosclerosis

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