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Anti-obesity and antihyperglycemic effects of *Crataegus aronia* extracts: *In vitro* and *in vivo* evaluations

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Hypocholesterolemic activity of *Crataegus aronia* L. (Rosaceae) is therapeutically praised. Its potent antiobesity ($P<0.001$, n=6-8) as well as marked triacylglycerol-reducing efficacies ($P<0.001$, n=6-8) in 10 weeks-high cholesterol diet (HCD) fed rats are demonstrated. Pancreatic triacylglycerol lipase (PL), α-amylase and α-glucosidase are an interesting pharmacological target for the management of dyslipidemia, atherosclerosis, diabetes and obesity. Comparable to acarbose, acute starch induced postprandial hyperglycaemia as well glycemic excursions in normoglycemic overnight fasting rats was highly significantly ($P<0.001$) dampened by *C. aronia* 100, 200 and 400 mg/Kg b.wt aqueous extracts (AE), but not acute glucose evoked postprandial hyperglycaemia increments, unlike diabetes pharmacotherapeutics metformin and glipizide. *C. aronia* aerial parts as well as fruits AEs (0.1-10 mg/mL) were identified as *in vitro* dual inhibitors of α-amylase and α-glucosidase with respective IC_{50} (mg/mL) of 2.1 ± 0.3 and 3.5 ± 0.7. Still, it lacked on *in vitro* hindrance of glucose movement, dissimilar to guar gum. Equivalent to orlistat (PL IC_{50} of 0.1 ± 0.0 µg/mL), *C. aronia* tested AEs and its purified bioactive phytoconstituents; quercetin and rutin inhibited highly substantially in a dose dependent trend PL *in vitro* (n=3), in an ascending order of obtained PL- IC_{50} (µg/mL): quercetin; 30.1 ± 2.8, rutin; 77.3 ± 11.7, *C. aronia* aerial parts; 225.2 ± 33.4 and *C. aronia* fruits; 286.1 ± 37.4. Flavonoid-rich *C. aronia,* as a functional food and a nutraceutical, modulating gastrointestinal carbohydrate and lipid digestion and absorption, maybe be advocated as an exquisite and potential candidate for combinatorial obesity-diabetes prevention and phytotherapy.

Keywords: *Crataegus aronia*, Rosaceae, pancreatic lipase, enzymatic starch digestion, high cholesterol diet, flavonoids

Biography:

Violet Kasabri, PhD, MSc, is a Biomedical Associate Professor at The University of Jordan. Dr Kasabri has over 30 PUBLICATIONS between peer reviewed journal articles and book chapters. She is an internationally recognized expert in many areas of natural product based therapeutics of Diabetes, Obesity and Cancer, in addition to her research and projects in Clinical Research and Drug Discovery. She is a regularly sought after and requested lecturer at the National, Regional and International Symposiums. Dr Kasabri is a regularly and frequently invited reviewer for numerous International journals with relevant fields of expertise. Her Recent publications include a paper on the use of *Salvia* species as efficacious anti-diabesity agents in addition to her work with pancreatic proliferative natural products as therapeutic regenerative agents. Dr Kasabri is a faculty member at the Faculty of Pharmacy, Dept. of Clinical Pharmacy-The University of Jordan where she routinely lectures on various topics related to Clinical Biochemistry. She has served as a member of various scientific societies and acted on a number of institutional committees including the Editorial Committee of the 15th Scientific Congress of the Association of Pharmacy Colleges in the Arab world. Dr. Kasabri is recognized by her peers as a scientific expert that integrates new technologies into everyday practices. Dr. Kasabri has been investigating the effectiveness and utility of natural products into preventive medicine of diabesity and cancer for the past years. Dr. Kasabri holds a BSc with highest honors in Biomedical Sciences from The University of Jordan. She completed her Masters with Distinction as well as her PhD in Biomedical Sciences from University of Ulster, N. Ireland, UK.