Olive leaf extract as a hypoglycemic agent in both human diabetic subjects and in rats.

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Source

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Abstract

Olive tree (Olea europaea L.) leaves have been widely used in traditional remedies in European and Mediterranean countries as extracts, herbal teas, and powder. They contain several potentially bioactive compounds that may have hypoglycemic properties. To examine the efficacy of 500 mg oral olive leaf extract taken once daily in tablet form versus matching placebo in improving glucose homeostasis in adults with type 2 diabetes (T2DM). In this controlled clinical trial, 79 adults with T2DM were randomized to treatment with 500 mg olive leaf extract tablet taken orally once daily or matching placebo. The study duration was 14 weeks. Measures of glucose homeostasis including HbA1c and plasma insulin were measured and compared by treatment assignment. In a series of animal models, normal, streptozotocin (STZ) diabetic, and sand rats were used in the inverted sac model to determine the mechanism through which olive leaf extract affected starch digestion and absorption. In the randomized clinical trial, the subjects treated with olive leaf extract exhibited significantly lower HbA1c and fasting plasma insulin levels; however, postprandial plasma insulin levels did not differ significantly by treatment group. In the animal models, normal and STZ diabetic rats exhibited significantly reduced starch digestion and absorption after treatment with olive leaf extract compared with intestine without olive leaf treatment. Reduced digestion and absorption was observed in both the mucosal and serosal sides of the intestine. Though reduced, the decline in starch digestion and absorption did not reach statistical significance in the sand rats. Olive leaf extract is associated with improved glucose homeostasis in humans. Animal models indicate that this may be facilitated through the reduction of starch digestion and absorption. Olive leaf extract may represent an effective adjunct therapy that normalizes glucose homeostasis in individuals with diabetes. PMID: 22512698 [PubMed - indexed for MEDLINE]
Food supplementation with an olive (*Olea europaea* L.) leaf extract reduces blood pressure in borderline hypertensive monozygotic twins.

Perrinjaquet-Moccetti T, Busjahn A, Schmidlin C, Schmidt A, Bradl B, Aydogan C.

Source

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Abstract

Hypertension is a harmful disease factor that develops unnoticed over time. The treatment of hypertension is aimed at an early diagnosis followed by adequate lifestyle changes rather than pharmacological treatment. The olive leaf extract, having antihypertensive actions in rats, was tested as a food supplement in an open study including 40 borderline hypertensive monozygotic twins. Twins of each pair were assigned to different groups receiving 500 or 1000 mg/day Olive leaf extract for 8 weeks, or advice on a favourable lifestyle. Body weight, heart rate, blood pressure, glucose and lipids were measured fortnightly. Blood pressure changed significantly within pairs, depending on the dose, with mean systolic differences of < or =6 mmHg (500 mg vs control) and < or =13 mmHg (1000 vs 500 mg), and diastolic differences of < or =5 mmHg. After 8 weeks, mean blood pressure remained unchanged from baseline in controls (systolic/diastolic: 133 +/- 5/77 +/- 6 vs 135 +/- 11/80 +/- 7 mmHg) and the low-dose group (136 +/- 7/77 +/- 7 vs 133 +/- 10/76 +/- 7), but had significantly decreased for the high dose group (137 +/- 10/80 +/- 10 vs 126 +/- 9/76 +/- 6). Cholesterol levels decreased for all treatments with significant dose-dependent within-pair differences for LDL-cholesterol. None of the other parameters showed significant changes or consistent trends. Concluding, the study confirmed the antihypertensive and cholesterol-lowering action of Olive leaf extract in humans.
Olive (Olea europaea) leaf extract effective in patients with stage-1 hypertension:
Comparison with Captopril.
1. Phytomedicine. 2010 Oct 29. [Epub ahead of print]

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A double-blind, randomized, parallel and active-controlled clinical study was conducted to evaluate the anti-hypertensive effect as well as the tolerability of Olive leaf extract in comparison with Captopril in patients with stage-1 hypertension. Additionally, this study also investigated the hypolipidemic effects of Olive leaf extract in such patients. It consisted of a run-in period of 4 weeks continued subsequently by an 8-week treatment period. Olive (Olea europaea L.) leaf extract was given orally at the dose of 500mg twice daily in a flat-dose manner throughout the 8 weeks. Captopril was given at the dosage regimen of 12.5mg twice daily at start. After 2 weeks, if necessary, the dose of Captopril would be titrated to 25mg twice daily, based on subject's response to treatment. The primary efficacy endpoint was reduction in systolic blood pressure (SBP) from baseline to week-8 of treatment. The secondary efficacy endpoints were SBP as well as diastolic blood pressure (DBP) changes at every time-point evaluation and lipid profile improvement. Evaluation of BP was performed every week for 8 weeks of treatment; while of lipid profile at a 4-week interval. Mean SBP at baseline was 149.3±5.58mmHg in Olive group and 148.4±5.56mmHg in Captopril group; and mean DBPs were 93.9±4.51 and 93.8±4.88mmHg, respectively. After 8 weeks of treatment, both groups experienced a significant reduction of SBP as well as DBP from baseline; while such reductions were not significantly different between groups. Means of SBP reduction from baseline to the end of study were -11.5±8.5 and -13.7±7.6mmHg in Olive and Captopril groups, respectively; and those of DBP were -4.8±5.5 and -6.4±5.2mmHg.
respectively. A significant reduction of triglyceride level was observed in Olive group, but not in Captopril group. In conclusion, Olive (Olea europaea) leaf extract, at the dosage regimen of 500mg twice daily, was similarly effective in lowering systolic and diastolic blood pressures in subjects with stage-1 hypertension as Captopril, given at its effective dose of 12.5-25mg twice daily.

PMID: 21036583 [PubMed - as supplied by publisher]

**Hypoglycemic and antioxidant effect of oleuropein in alloxan-diabetic rabbits.**


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Patients with diabetes mellitus are likely to develop certain complication such as retinopathy, nephropathy and neuropathy as a result of oxidative stress and overwhelming free radicals. Treatment of diabetic patients with antioxidant may be of advantage in attenuating these complications. Oleuropein, the active constituent of olive leaf (Olea europaea), has been endowed with many beneficial and health promoting properties mostly linked to its antioxidant activity. This study aimed to evaluate the significance of supplementation of oleuropein in reducing oxidative stress and hyperglycemia in alloxan-induced diabetic rabbits. After induction of diabetes, a significant rise in plasma and erythrocyte malondialdehyde (MDA) and blood glucose as well as alteration in enzymatic and non-enzymatic antioxidants was observed in all diabetic animals. During 16 weeks of treatment of diabetic rabbits with 20 mg/kg body weight of oleuropein the levels of MDA along with blood glucose and most of the enzymatic and non-enzymatic antioxidants were significantly restored to establish values that were not different from normal control rabbits. Untreated diabetic rabbits on the other hand demonstrated persistent alterations in the oxidative stress marker MDA, blood glucose and the
antioxidant parameters. These results demonstrate that oleuropein may be of advantage in inhibiting hyperglycemia and oxidative stress induced by diabetes and suggest that administration of oleuropein may be helpful in the prevention of diabetic complications associated with oxidative stress.
PMID: 16236331 [PubMed - indexed for MEDLINE]

Further scientifically studies

1. Olive (Olea europaea) leaf extract effective in patients with stage-1 hypertension: Comparison with Captopril.

Susalit E, Agus N, Effendi I, Tjandrawinata RR, Nofiarny D, Perrinjaquet-Moccetti T, Verbruggen M.


2. Cardiotonic and antidysrhythmic effects of oleanolic and ursolic acids, methyl maslinate and uvaol.

Somova LI, Shode FO, Mipando M.


3. Blood pressure lowering effect of an olive leaf extract (Olea europaea) in L-NAME induced hypertension in rats.

Khayyal MT, el-Ghazaly MA, Abdallah DM, Nassar NN, Okpanyi SN, Kreuter MH.


4. [A clinical trial of a titrated Olea extract in the treatment of essential arterial hypertension].

5. [Treatment of hypertension with standardized olive leaf extract].

SCHELLER EF.


6. Antioxidant and antimicrobial activities of individual and combined phenolics in Olea europaea leaf extract.

Lee OH, Lee BY.