Studied Olea europaea


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

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Source

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Abstract

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 (EFLA®943) was given orally at the dose of 500 mg twice daily in a flat-dose manner throughout the 8 weeks. Captopril was given at the dosage regimen of 12.5 mg twice daily at start. After 2 weeks, if necessary, the dose of Captopril would be titrated to 25 mg 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±5.58 mmHg in Olive group and 148.4±5.56 mmHg in Captopril group; and mean DBPs were 93.9±4.51 and 93.8±4.88 mmHg, 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±7.6 mmHg in Olive and Captopril groups, respectively; and those of DBP were -4.8±5.5 and -6.4±5.2 mmHg, 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 500 mg 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 12.5-25 mg twice daily.


Antihypertensive, antiatherosclerotic and antioxidant activity of triterpenoids isolated from Olea europaea, subspecies africana leaves.

Somova LI, Shode FO, Ramnanan P, Nadar A.

Source

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Abstract

For the first time a biossay-directed study of triterpenoids isolated from the leaves of Olea europaea from Greece, from wild African olive and from a cultivar of O. europaea grown in Cape Town was reported. The experiment was undertaken since our preliminary analyses showed that the African wild olive leave is rich in triterpenoids and contain only traces of the glycoside oleuropein, which is typical for the European olive leaves. The isolate of the African wild olive leaves (AO) used in the experiments was found to contain 0.27% 1:1 mixture of oleanolic acid and ursolic acid, named oleuafricein. The isolate of Greek olive leaves (GO) was found to contain 0.71% oleanolic acid, and the Cape Town cultivar (CT) contained 2.47% oleanolic acid. No ursolic acid was found in either GO or CT. The antihypertensive, diuretic, antiatherosclerotic, antioxidant and hypoglycemic effects
of authentic oleanolic and ursolic acid and the three isolates (GO, AO and CT) were studied on Dahl salt-sensitive (DSS), insulin-resistant rat genetic model of hypertension. All three isolates, in a dose 60 mg/kg b.w. for 6 weeks treatment, prevented the development of severe hypertension and atherosclerosis and improved the insulin resistance of the experimental animals. GO, OA and CT isolates could provide an effective and cheap treatment of this particular, most common type of salt-sensitive hypertension in the African population.

Effects of oleuropeoside in isolated guinea-pig atria.
Duarte J, Pérez O, Zarzuelo A, Jiménez J, Pérez-Vizcaíno F, Tamargo J.
Source
Department of Pharmacology, School of Pharmacy, University of Granada, Spain.
Abstract
The effects of oleuropeoside were studied on the electromechanical properties of isolated guinea-pig atria. In spontaneously beating right atria, oleuropeoside decreased the amplitude of contractions (IC50 = 1.3 +/- 0.2 x 10(-4) M), slightly decreased atrial rate, and lengthened sinus node recovery time. Oleuropeoside also inhibited peak contractile force in electrically driven left atria incubated in normal (IC50 = 1.5 +/- 0.5 x 10(-4) M) and in 27 mM K+ Tyrode solution (IC50 = 1.7 +/- 0.4 x 10(-4) M). These negative inotropic effects were not accompanied by significant changes in the characteristics of action potentials recorded in atria incubated in either normal or depolarizing solutions. These results indicate that oleuropeoside produced an electromechanical uncoupling that cannot be attributed to an inhibitory effect on Ca2+ entry through L-type channels. Therefore, the negative inotropic effect may reflect an action of oleuropeoside perhaps at an intracellular level.

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Hypoglycemic activity of olive leaf.
Source
Departamento de Farmacologia, Facultad de Farmacia, Universidad de Granada, Spain.
Abstract
The hypoglycemic activity of olive leaf was studied. Maximum hypoglycemic activity was obtained from samples collected in the winter months, especially in February. One of the compounds responsible for this activity was oleuropeoside, which showed activity at a dose of 16 mg/kg. This compound also demonstrated antidiabetic activity in animals with alloxan-induced diabetes. The hypoglycemic activity of this compound may result from two mechanisms: (a) potentiation of glucose-induced insulin release, and (b) increased peripheral uptake of glucose.

Vasodilator effect of olive leaf.
Zarzuelo A, Duarte J, Jiménez J, González M, Utrilla MP.
Source
Department of Pharmacology, School of Pharmacy, University of Granada, Spain.
Abstract
We studied the importance of the smooth vascular muscle endothelium in the vasodilator action of the decoction of olive (Olea europaea) leaf. The decoction caused relaxation of isolated rat aorta preparations both in the presence (IC50 1.12 +/- 0.33 mg/ml) and in the absence (IC50 1.67 +/- 0.16 mg/ml) of endothelium. The results indicate that the relaxant activity of the lyophilized decoction is independent of the integrity of the vascular endothelium. We also showed that oleuropeoside is a component responsible for vasodilator activity but, from the results, it seems likely that at least one
other principle is to be found in the olive leaf which is either a vasodilator itself or else potentiates the relaxant effect of oleuropeoside.

HPLC-ESI-QTOF-MS as a Powerful Analytical Tool for Characterising Phenolic Compounds in Olive-leaf Extracts.

Source
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Abstract
INTRODUCTION:
Olea europaea L. leaves may be considered a cheap, easily available natural source of phenolic compounds. In a previous study we evaluated the possibility of obtaining bioactive phenolic compounds from olive leaves by pressurised liquid extraction (PLE) for their use as natural antioxidants. The alimentary use of these kinds of extract makes comprehensive knowledge of their composition essential.

OBJECTIVE:
To undertake a comprehensive characterisation of two olive-leaf extracts obtained by PLE using high-performance liquid chromatography coupled to electrospray ionisation and quadrupole time-of-flight mass spectrometry (HPLC-ESI-QTOF-MS).

METHOD:
Olive leaves were extracted by PLE using ethanol and water as extraction solvents at 150°C and 200°C respectively. Separation was carried out in a HPLC system equipped with a C(18) -column working in a gradient elution programme coupled to ESI-QTOF-MS operating in negative ion mode.

RESULTS:
This analytical platform was able to detect 48 compounds and tentatively identify 31 different phenolic compounds in these extracts, including secoiridoids, simple phenols, flavonoids, cinnamic acid derivatives and benzoic acids. Lucidumoside C was also identified for the first time in olive leaves.

CONCLUSION:
The coupling of HPLC-ESI-QTOF-MS led to the in-depth characterisation of the olive-leaf extracts on the basis of mass accuracy, true isotopic pattern and tandem mass spectrometry (MS/MS) spectra. We may conclude therefore that this analytical tool is very valuable in the study of phenolic compounds in plant matrices.

Olive tree (Olea europaea) leaves: potential beneficial effects on human health.
El SN, Karakaya S.

Source
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Abstract
Olive tree (Olea europaea L.) leaves have been widely used in traditional remedies in European and Mediterranean countries such as Greece, Spain, Italy, France, Turkey, Israel, Morocco, and Tunisia. They have been used in the human diet as an extract, an herbal tea, and a powder, and they contain many potentially bioactive compounds that may have antioxidant, antihypertensive, antiatherogenic, anti-inflammatory, hypoglycemic, and hypocholesterolemic properties. One of these potentially bioactive compounds is the secoiridoid oleuropein, which can constitute up to 6-9% of dry matter in the leaves. Other bioactive components found in olive leaves include related secoiridoids,
flavonoids, and triterpenes. The evidence supporting the potentially beneficial effects of olive leaves on human health are presented in this brief review.


The effects of polyphenols in olive leaves on platelet function.

Singh I, Mok M, Christensen AM, Turner AH, Hawley JA.

Source
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Abstract
INTRODUCTION:
The phenolic compounds of olive leaves and olive oils in the Mediterranean diet have been associated with a reduced incidence of heart disease. Accordingly, antioxidant-rich diets may prevent the deleterious effects of oxidative metabolism by scavenging free radicals, thus inhibiting oxidation and delaying atherosclerosis. The process involves phospholipase C activation and arachidonic acid metabolism, and is thought to reduce hydrogen peroxide (H\(_2\)O\(_2\)). In our study, an extract of Olea europaea L. leaves was used. The active phenolic compounds in this extract are part of the secoiridoid family, known for their capacity to scavenge H\(_2\)O\(_2\). The results from this study will help to improve our understanding of effects of polyphenol antioxidants in olive leaf extract on platelet function.

METHODS:
Full blood examination (FBE), platelet aggregation, and ATP release were performed on samples from fasting, normal, healthy male subjects. Platelet function at increasing concentrations of oleuropein was investigated through measures of platelet aggregation and ATP release from activated platelets.

RESULTS:
Blood analysis (n=11) revealed a significant dose-dependant reduction in platelet activity with olive extract concentrations of 1.0% v/v (P<0.001). ATP Release showed a similar pattern (P=0.02).

CONCLUSIONS:
Olive leaf polyphenols derived from O. europaea L. leaves inhibited in vitro platelet activation in healthy, non-smoking males. Further bioavailability studies need to be undertaken to determine the in vivo effect of extract on platelet function and to validate the present results.


Antioxidant activity of olive polyphenols in humans: a review.

Raederstorff D.

Source
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Abstract
In vitro and animal studies show that polyphenols from olives have potent antioxidant activities; 50% of the phenolic compounds contained in olives and virgin olive oil are hydroxytyrosol and derivatives thereof. Hydroxytyrosol is the major olive polyphenol consumed and well absorbed in humans. It is considered to have the highest antioxidant potency compared to the other olive polyphenols. Review of the human intervention studies showed that olive polyphenols decreased the levels of oxidized-LDL in plasma and positively affected several biomarkers of oxidative damage. The antioxidant effects of olive polyphenols on low-density lipoprotein (LDL) oxidation are observed after a dietary intake of about 10 mg per day. The overall evidence from in vitro assays, and animal and human studies support the antioxidant effect of olive polyphenols. However, further larger human studies are needed to clarify the effect of olive polyphenols on markers of oxidative stress, particularly DNA damage and plasma isoprostane levels.


Source
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Abstract
In this work, high-performance liquid chromatography (HPLC) coupled to electrospray time-of-flight mass spectrometry (ESI-TOF-MS) and electrospray ion trap multiple-stage tandem mass spectrometry (ESI-IT-MS(2)) has been applied to screen phenolic compounds in olive leaf extracts. The use of a small particle size C18 column (1.8 micro) provided great resolution and made separation of a lot of isomers possible. The structural characterization was based on accurate mass data obtained by ESI-TOF-MS, and the nature of fragmentation ions were further confirmed by ESI-IT-MS(2) when possible. In addition, we employed tetrazolium salt (MTT)-based assays to assess the effects of olive leaf extracts on the growth of human tumor-derived cells. Upon this approach, we achieved an accurate profile of olive leaf phenolics along with the identification of several important isomers of secoiridoids and flavonoids. This will allow a better understanding of the complete composition of olive-leaf-bioactive compounds as well as their involvement in Olea europaea L. biochemical pathways. Importantly, olive leaf extracts exhibited dose-dependent inhibitory effects on the metabolic status (cell viability) of three breast cancer models in vitro. Since the tumoricidal activity of the extracts should be mainly attributed to the identified olive leaf phenolics, these findings warrant further investigation at the structure-function molecular level to definitely establish the anticancer value of these phytochemicals.


Efficient method for screening and identification of radical scavengers in the leaves of Olea europaea L.

Wang X, Li C, Liu Y, Li H, Di D.

Source
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Abstract
In this article, an efficient method was developed to screen, isolate and identify the major radical scavengers in the leaves of Olea europaea L. by DPPH-HPLC-DAD, HSCCC and NMR. The method of DPPH-HPLC-DAD was used to screen the major radical scavengers. It was found that three major constituents (A, B, C) in the extract of the leaves of O. europaea L. possessed potential antioxidant activities. In order to identify the chemical structures of those compounds, the HSCCC method with a two-phase solvent system composed of petroleum ether-ethyl acetate-water at an optimized volume ratio of 6:600:700 (v/v/v) together with column chromatography was developed to isolate and purify the active compounds. Pure compounds A (225 mg), B (10 mg) and C (12 mg) with purities 92.6, 95.1 and 96.4%, respectively, were obtained from the crude sample (500 mg). Their structures were identified as oleuropein (A), luteolin-7-O-glucoside (B) and verbascoside (C) by (1) H-NMR and (13) C-NMR.


Isolation and characterization of a new hydroxytyrosol derivative from olive (Olea europaea) leaves.

Paiva-Martins F, Pinto M.

Source
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Abstract

A new secoiridoid compound was isolated from the leaves of Olea europaea. This compound, not previously identified, is the bis methylacetal of oleuropein aglycone, the 3,4-dihydroxyphenylethyl [(2,6-dimethoxy-3-ethylidene)-tetrahydropyran-4-yl]acetate (3,4-DHPEA-DETA), and was found in different olive cultivar phenolic extracts as one of the major secoiridoid components. This compound was shown to be easily transformed in acidic aqueous media into 3,4-DHPEA-EDA, the major polyphenolic compound found in olive oil, and permitted us to increase the yield of 3,4-DHPEA-EDA isolation from the olive leaf extract. The antiradical activity of this new compound, evaluated by scavenging of 2,2-diphenyl-1-picrylhydrazyl radicals, was much higher than the one found for 3,4-DHPEA-EDA or alpha-tocopherol. Results also call to attention the need for a careful identification of compounds by HPLC-MS, usually performed in acidic conditions.