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NATURAL PRODUCTS

TOPIC:

OLIVE LEAF

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SCIENTIFIC NAME(S): *Olea europaea* L. Family: oleaceae.

COMMON NAME(S): Olive leaf

BOTANY: The olive tree is an evergreen, growing to approximately 10 m in height. Native to the Mediterranean regions, the trees are also cultivated in areas of similar climates in the Americas. The small, leatherly leaves are gray-green on top, and the underside contains fine, white, scale-like hairs. The leaves are gathered throughout the year.[1-3]

HISTORY: The olive tree was cultivated in Crete as far back as 3500 BC, where the leaves had been used to clean wounds. Symbolically, the olive branch stands for peace. The leaves were worn by athletes in ancient Olympic games.[1] Medicinal properties of the plant in the 1800s include malaria treatment. In the 1900s, the leaf constituent oleuropein was found to resist disease. The plant has also been reported to possess some hypotensive properties.[2]

CHEMISTRY: Olive leaf contains the active constituent oleuropein (chief constituent 60 to 90 mg/g). This iridoid has been pharmacologically analyzed.[4] Other secoiridoids include 11–demethyloleuropein, 7,11–dimethyl ester of oleoside, ligustroside, oleuroside, and unconjugated secoiridoid-type aldehydes; triterpenes and flavonoids are also present, and include rutin, and glycosides of apigenin and luteolin.[3] Other sources list oleasterol, leine, and glycoside oleoside as being present in olive leaf.[1,2] A report on peroxidase and ethylene formation in olive leaves is available.[5] A comparison of organelles from young and mature olive leaves has been performed, finding no remarkable differences.[6]

PHARMACOLOGY: In animal experimentation, oleuropein has always produced a reproducible reduction in blood pressure.[2] It has been shown to increase coronary flow and left intraventricular pressure in rabbit myocardium.[3] A decoction of olive leaves caused relaxation of rat aorta preparations in another report.[7] Oleuropein exerts hypotensive action in cats and dogs as well. The hypotensive action of this iridoid depends on specific animal species.[4]

Also in animal experimentation, olive leaf has demonstrated antispasmodic, coronary dilator, and antiarrhythmic properties in addition to its hypotensive effects.[8] A proposed mechanism as to how oleuropein may exert its effects may be a result of its direct action on smooth muscle.[4] Oleuropeoside was found to be responsible for vasodilator activity in another report.[7]

Documentation regarding olive leaf's use as an antihypertensive in humans is insignificant.[8] Other sources state no definite proof of the therapeutic efficacy in this area.[3,9] In contrast, Italian folk medicine employs dried olive leaf as a remedy for high blood pressure.[9] Other sources state that olive leaves do lower pressure and help to improve circulatory function as well.[1] Another report mentions the hypotensive activity of olive leaves to be slight, but existent, and suggests their use only in mild cases of hypertension.[2]

Olive leaf has other documented properties. Hypoglycemic activity was demonstrated in animals. Mechanisms were stated as being potentiation of glucose-induced insulin release, and increased peripheral uptake of glucose.[10] Olive leaf is also said to be mildy diuretic. It enhances renal and digestive elimination functions, along with renal excretion of water.[3] It may be used to treat cystitis as well.[1] Oleuropein was also listed as a good antioxidant.[3] Many unsubstantiated claims and "cure-alls,", except for "testimonial-type" proof, exist for olive leaf. Some of these claims include therapy for chronic fatigue syndrome, herpes and other viral infections, arthritis, yeast infection, skin conditions, and others. More research and clinical trials are necessary to validate these claims.

TOXICOLOGY: Potential toxicity of olive leaf is not well known.[3] Oleuropein in doses up to 1 g/kg body weight in albino mice did not provoke lethality in an analysis on olive leaf.[4] The German Commision E monographs list no known risks associated with the plant.[9] One source states the drug as causing gastric symptoms, and suggests that it be taken with meals because of this irritant effect.[2]

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SUMMARY: The olive tree dates back to 3500 BC. The leaves possess hypotensive properties in animal experimentation, probably as a result of vasodilator activity. The leaves have been used in humans for hypertension, but the leaf's effects may only be useful in mild cases. Olive leaf also exhibits hypoglycemic, renal, and antimicrobial effects. Toxicity of the plant is not well known, but there seems to be little risk with its use.

PATIENT INFORMATION – Olive Leaf

Uses: The olive leaves possess hypotensive properties in animal experimentation and have been used in humans for hypertension (possibly only for mild cases). The olive leaves also have hypoglycemic, renal, and antimicrobial effects.

Side Effects: Toxicity is not well known, but the leaf may cause gastric symptoms. Use in diabetic patients should be followed carefully due to the hypoglycemic effects of olive leaf.

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[5] Vioque B, et al. Perioxidases and ethylene formation in olive tree leaves. *Rev Esp Fisiol* 1989;45(1):47-52.
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