



LETTER TO THE EDITOR

Renoprotective activity of *Ficus carica* seed oil

Ficus carica çekirdek yağının renoprotektif aktivitesi

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To the Editor,

Ficus carica is a plant that has been known for thousands of years, and whose fruits are used as food. Recent studies have found significant properties not only in the fruit but also in other parts of the plant such as seeds, latex, and leaves¹. Pharmacological effects of *Ficus carica* include antibacterial effect of the leaves, antioxidant effect of the leaves, fruits, latex, and seeds, anticancer effect of the leaves, fruits, and latex, anti-inflammatory effect of the leaves, fruits, latex, and seeds, antipyretic effect of the leaves, and anti-acne effect of the fruits and leaves²⁻⁴. Turkey ranks first in *Ficus carica* production with 306,499 tons, followed by Egypt with 189,339 tons, and Morocco with 128,380 tons⁵. This makes Turkey one of the countries with the easiest access to *Ficus carica* products. However, it is known that the utilization of other parts besides the fruit is extremely limited. In this context, our team has focused on providing information about the renoprotective effects of *Ficus carica* seed oil.

The kidneys regulate fluid and electrolyte balance in the body by filtering metabolic waste, electrolytes and water from the body and excreting them in the form of urine. Kidney damage caused by various processes can have serious consequences such as electrolyte imbalance, difficulty controlling blood pressure, accumulation of metabolic waste, and inability to maintain fluid balance. These conditions can lead to health problems such as kidney failure, high blood pressure, and electrolyte imbalances. Protecting the kidneys requires lifelong attention⁶. Although there are different kidney diseases, when studying the underlying mechanisms of the pathologies, oxidative

damage, inflammation, and structural abnormalities are mainly identified⁶⁻⁷. In the treatment of renal injury, the use of antioxidants and anti-inflammatory agents against reactive oxygen and nitrogen species that accumulate during renal ischemia-reperfusion has been observed⁸; in acute kidney injury, the use of loop diuretics and non-steroidal anti-inflammatory agents in combination with ACE inhibitors or angiotensin receptor blockers has been noted⁶.

Our studies have demonstrated the renal protective effect of *Ficus carica* seed oil in experimental models. In one of these models, the acute myoglobinuria renal injury model, bilateral lower limbs were injected intramuscularly with 8 ml/kg of 50% hypertonic glycerol, followed by oral administration of *Ficus carica* seed oil at doses of 3 and 6 ml/kg, three times. The administered *Ficus carica* seed oil promoted the recovery of functional damage and increased the antioxidant capacity, along with an improvement in morphological damage⁴. In another experimental study, the protective effect of *Ficus carica* seed oil on renal ischemia-reperfusion injury was investigated. For this purpose, rats were orally administered 3 ml/kg *Ficus carica* seed oil for 14 days. A nephrectomy of the right kidney was then performed, followed by non-traumatic clamping of the left kidney for 45 minutes of ischemia and 60 minutes of reperfusion under anesthesia. At the end of the study, the administered *Ficus carica* seed oil was found to have protective properties against renal ischemia-reperfusion injury due to its ability to reduce oxidative damage⁹.

The renal protective effect is important not only for therapeutic purposes after renal injury but also to

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reduce the effects of injury before it occurs. In experimentally induced kidney damage, there were statistically significant increases in malondialdehyde (a marker of oxidative stress and a by-product of increased cell membrane and tissue integrity), total oxidation status (which indicates the amount of total oxidative damage markers in the tissue), decreased reduced glutathione (a tripeptide found in cells with antioxidant properties), and total antioxidant status (indicating the amount of total antioxidants in the tissue) were observed in the untreated groups compared to the control groups, and these levels became similar to control levels with the administration of *Ficus carica* seed oil^{4,9}. This improvement and protection are attributed to the high antioxidant and anti-inflammatory content of *Ficus carica* seed oil⁹⁻¹⁰. Moreover, this protective and therapeutic activity has been demonstrated not only for the kidneys but also for the small intestine in studies conducted by our team³.

In summary, *Ficus carica* seed oil possesses properties that can be used by everyone and can be integrated into people's diets. In addition to its accessibility, its long-term use has both protective and therapeutic effects against kidney damage. Further studies should elucidate the molecular mechanisms underlying its efficacy and determine its pharmacokinetic properties.

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