



# HerbClip™

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**File: ■ Prickly Pear Cactus (*Opuntia ficus-indica*)  
■ Functional Foods**

**HC 050692-386**

**Date: October 15, 2009**

**RE: Prickly Pear Research Highlights Broad Potential for this Traditional Food**

Hasse C, Feistel B, Felker P, et al. *Opuntia*- a cactus crop and its many health benefits. *NutraCos*. Sep/Oct 2008:17-22.

The genus *Opuntia* includes approximately 200 species, many of which produce colorful edible prickly pear fruit and edible cladodes (modified stems) known as nopales or young nopalitos, popular foods in Mexico and the southern USA. Indian fig cactus (*Opuntia ficus-indica*) is the most common culinary species. Traditional medicinal uses of prickly pear cactus include the treatment of hypoglycemia, allergies, ulcers, rheumatism, and diabetes. The authors write "Because of its functional compounds *Opuntia* is the perfect candidate for the production of food supplements and health promoting food."

Prickly pear cactus fruit pigments are a source of natural dyes for food use, including red betacyanins and yellow betaxanthins. These pigments possess antioxidant and antiviral effects. Other biologically active pigments found in prickly pear cactus fruit include flavonoids, such as quercetin, kaempferol, and isorhamnetin. However, the flavonoids are only found in the peel and not in the edible portion of the fruit. Prickly pear cacti are a source of calcium, magnesium, and eight essential amino acids. Pectin and water-soluble fiber from prickly pear cacti are effective in treating problems associated with diabetes and obesity, including the regulation of blood sugar and low-density lipoprotein (LDL) metabolism. Prickly pear cacti are cultivated in many countries, including Mediterranean nations, Mexico, Argentina, Brazil, China, and Korea. The cladodes are used as animal fodder and as hosts for the cochineal beetle, a source of valuable red dye. The fresh and canned prickly pear cactus products are available in food markets in many parts of the world. The authors write that these products contain high levels of betalains, carotenoids, and polyphenols. The vitamin C content is similar to many fruits, and the report of taurine in cactus fruits needs to be confirmed by other authors.

Antioxidants found in prickly pear cactus include pigments such as betalains, flavonoids, and carotenoids, as well as vitamin C. Prickly pear cactus betalains, both red betacyanin

and yellow betaxanthin, have good bioavailability, as well as free radical scavenging activity against reactive oxygen species (ROS). A recent paper has reported neuroprotective effects mediated by prickly pear cactus flavonoids. Pre-clinical studies have reported anticancer effects against cervical, ovarian, and bladder cancers, and a lack of toxic effects on animals. The mechanism of action for these effects needs further study, but it has been reported to involve an increase in apoptosis (programmed cell death). In vivo studies in mammals have indicated that extracts of prickly pear (*O. streptacantha*) cladodes inhibit the replication of viruses including herpes simplex type 2, influenza, and human immunodeficiency virus-1 (HIV-1). Many studies have demonstrated that prickly pear cactus cladode and fruit extracts and their constituents possess anti-inflammatory, analgesic, and anti-ulcerogenic effects. The anti-hangover effect of prickly pear fruit extract may be linked to anti-inflammatory mechanisms of action, but more research is needed for confirmation. The anti-hangover effect of prickly pear fruit extract is controversial with one paper finding an effect and another study not being able to repeat the effect.

Studies have demonstrated the hypoglycemic effects of the cladodes on non-diabetic animals and diabetic animals and humans. One animal study has found that a combination of insulin and a prickly pear cactus (*O. fuliginosa*) extract lowers glucose levels to normal with a lower dose than insulin alone. Another animal study has shown that prickly pear cactus seed oil decreases serum glucose levels and increases glycogen formation. Animal and clinical studies have revealed that prickly pear cactus reduces cholesterol levels and improves lipid composition. Animal studies using the dried cladodes or seed oil have demonstrated lower serum triglyceride (cladode only), LDL cholesterol, and total cholesterol levels. Researchers have often attributed this to the fiber content of the cladodes, but, aside from seed oil, other constituents may play a role. Research has uncovered other biological activities, including neuroprotective effects of its flavonoids, inhibition of enzymes involved in benign prostate hyperplasia (BPH) by flower extracts, diuretic effects of decocted fruit, flowers, or pads in rats, and hepatoprotective properties of the juice in rats.

Researchers are currently studying the proprietary standardized OpunDia™ extract (Finzelberg GmbH & Co. KG; Andernach, Germany) made from the Andyboy™ Indian fig prickly pear cactus cultivar (D'Arrigo Bros. Co.; Salinas, California) in the management of glucose, metabolic syndrome, and type 2 diabetes. A clinical trial is underway at Western Illinois University on the safety and the effect of OpunDia in glucose management in pre-diabetic patients. The authors write that the results are promising and indicate decreases in Oral Glucose Tolerance Test (OGTT) 2-hour values.

—Marissa Oppel-Sutter, MS

The American Botanical Council has chosen not to reprint the original article.

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