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**File: ■ Coriander (Fruit; *Coriandrum sativum*)
■ Cilantro (Leaf)**

HC 111244-469

Date: March 29, 2013

RE: Review of the Medicinal Effects of Cilantro (*Coriandrum sativum*)

Abascal K, Yarnell E. Cilantro—culinary herb or miracle medicinal plant? *Altern Complement Ther.* October 2012;18(5):259-264.

Coriander (cilantro, Chinese parsley; *Coriandrum sativum*) is a widely used cooking herb. Seeds or fruits are called coriander; leaves are called cilantro or Chinese parsley. The plant has been used so long and spread so widely that its origins are uncertain. Coriander was found in the Neolithic level of the Nahal Hemar Cave in Israel and in the tomb of Tutankhamun. While mainly used in food in the West, in India, Iran, Pakistan, and Morocco the plant is also a medicine. The seed is widely used internally as a carminative, digestive, spasmolytic, and galactagogue. Today, coriander is used in digestive, respiratory, and urinary disorders; anxiety and insomnia, allergies, amoebic dysentery, burns, coughs, cystitis, dizziness, edema, headaches, hemorrhoids, rashes, urethritis, urinary tract infections, urticaria, and vomiting. In Morocco, it is used to treat diabetes and dyslipidemia, and as a diuretic. In India, it is used for spermatorrhea, leucorrhea, and rheumatic fever. The seed is also said to be an aphrodisiac. Topically, it is used for joint pain and in cosmetics.

Cilantro is purported to remove heavy metals, especially mercury, from the body; however, there is very little evidence to support this claim and much skepticism of its validity. Conversely, cilantro may reduce uptake of heavy metals if ingested during exposure and may protect the liver from some toxins. Cilantro reduced effects of lead exposure on mouse liver enzymes, testosterone levels, sperm density, and concentrations of lead in testis; protected against lead deposits in mice femurs to the same degree as dimercaptosuccinic acid (DMSA; a chelating agent) without affecting calcium deposits; reduced farmed fishes' uptake of cadmium by 12-17%; and provided significant liver protection to rats exposed to carbon tetrachloride, equal to a standard dose of silymarin (from milk thistle [*Silybum marianum*]). With increasing loads of heavy metals in foods, the authors suggest using cilantro especially when eating foods like fish, likely to contain mercury and other heavy metals.

Studies on the use of coriander in diabetes are encouraging. In a human study, 20 volunteers were controls and 20 took 2.5 g of ground coriander twice daily for 60 days. The active group had significant reductions in fasting blood sugar and lipid peroxidation in red blood cells; and higher β -carotene, vitamin A, C, and E, and glutathione levels. Most diabetes drugs do not benefit lipid profiles, but in *Meriones shawi* rats, which

develop obesity, hyperglycemia, and hyperlipidemia on a high-calorie diet and restricted physical activity, coriander had the same effects on blood glucose as glyburide and caused a greater decrease in cholesterol-associated lipids. It significantly reduced dyslipidemia in rabbits and increased catalase and glutathione in the animals' livers. However, in another rat model comparing two doses of coriander with glimepiride, while 500 mg/kg was more effective than 250 mg/kg, the reference drug was more effective than either.

About 50% of the world's population has ulcerogenic *Helicobacter pylori* infection, with higher rates in people of lower socioeconomic status – up to 100% in some countries. Resistance is growing in *H. pylori*, limiting antibiotic use. Among 50 plants used in Pakistani traditional medicine for digestive issues, coriander strongly inhibited reactive oxygen species in *H. pylori*-infected cells. While its effects were not the strongest of plants studied, results suggest its usefulness in traditional formulas. In vivo, coriander seed protected against ulcerogenic effects of salt, sodium hydroxide, ethanol, indomethacin, and pylorus ligation, suggesting utility in the diets of those with ulcers.

Coriander seed oil (60-70% linalool) acts against both gram-positive and gram-negative bacteria, including *Staphylococcus aureus* (even methicillin-resistant *S. aureus* [MRSA]), *S. haemolyticus*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Listeria monocytogenes*, and *Acinetobacter baumannii*, and many involved in skin conditions. In a microdilution broth susceptibility assay, it synergistically potentiated effects of chloramphenicol, ciprofloxacin, gentamicin, and tetracycline against *A. baumannii*, and added to the effects of cefoperazone and piperacillin. Linalool has a very low sensitizing potential, unlike many essential oils used for skin conditions like impetigo, eczema, herpes simplex, etc. Isolated cilantro aldehydes, while having an unpleasant odor, were effective against *Candida* spp., *S. aureus*, *Salmonella typhi*, *Salmonella choleraesuis*, and other bacteria, and more effective than linalool against *L. monocytogenes*. A 0.5% coriander oil-based lotion significantly reduced ultraviolet B erythema, although it was less of a reduction than what a 1% hydrocortisone did. In a study of herbal sunscreens, participants favored a coriander-based preparation.

Sedative and anxiolytic properties of coriander have been tested in vivo. At 100 and 200 mg/kg in mice, it was nearly equal to diazepam as an anxiolytic. An aqueous extract dose-dependently reduced locomotor activity, suggesting possible muscle relaxant effects. In rats, a daily dose of coriander extract reduced urinary excretion of vanillylmandelic acid and increased excretion of ascorbic acid, while dose-dependently reducing scopolamine-induced amnesia and inhibiting brain and liver lipid peroxidation more than ascorbic acid. Both young and old rats that were fed cilantro for 45 days had improved memory comparable with that caused by intraperitoneal piracetam.

Other research has found that aqueous and ethanolic coriander extracts prevent nematodes from hatching, with the alcoholic extract more effective against adult parasites. In rats with induced arthritis, coriander extract reduced joint swelling consistently more than indomethacin and reduced synovial expression of proinflammatory cytokines. While more study is needed, this traditional culinary herb clearly has much more to offer than many Western herbalists may have previously realized.

—Mariann Garner-Wizard

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