

## Letter to the Editor

### Treatment of fibroids: the use of beets (*Beta vulgaris*) and molasses (*Saccharum officinarum*) as an herbal therapy by Dominican healers in New York City

As part of a project investigating the use of plant remedies for women's health by ethnic healers in New York City, we compiled a list of species prescribed by Latino healers for the treatment of uterine fibroids, hot flashes, endometriosis and menorrhagia. One of the plants frequently prescribed for fibroids is the common beet, *Beta vulgaris* L. (Chenopodiaceae). Three of eight healers interviewed prescribed beet root in some form as part of their treatment for fibroids (Balick et al., 2000). The consumption of beets combined with molasses (from *Saccharum officinarum* L., Gramineae) is thought by Dominican healers to shrink fibroids or to "strengthen and fortify the uterus after the fibroid had been drained from the body" (Balick et al., 2000). In this note we rationalize possible nutritional and cultural justification for using beets and molasses in Dominican ethnomedicine.

Beets contain high levels of soluble and insoluble fiber, which could theoretically affect estrogen levels. The total dietary fiber in raw beets is 2.8 g/100 g, which translates into 7.62 g for a two-cup serving, or about 30% of the daily value based on a 2000-cal diet (U.S. Department of Agriculture Agricultural Research Service, 1999). A high fiber intake reduces enterohepatic recirculation of estrogen, increases fecal and urinary excretion, and can result in decreased plasma levels of estrogen (Adlercreutz, 1991). A high dietary intake of beet root could conceivably reduce endogenous estrogen levels through increased intake of fiber.

Hormones, especially estrogen, affect the growth of fibroids, which become enlarged during pregnancy and regress after menopause. The primary pharmaceutical treatment for fibroids, GnRH agonists, decreases estrogen and progesterone levels. Phytoestrogens, or plant estrogens, bind to estrogen receptors but are weak in comparison with endogenous estrogens. The net effect in estrogen-replete premenopausal women appears to be anti-estrogenic (Knight and Eden, 1996). Phytoestrogens could have a hormone-modulating effect, but there is no evidence that beet root contains phytoestrogens. Beet leaves, on the other hand, appear to be estrogenic; cattle fed large amounts of sugar beet leaves (from a different variety of the same species

as red beets) manifested infertility and genital tract abnormalities, and several fractions of sugar beet leaves injected subcutaneously increased uterine weights in mice (a test for estrogenicity) (Elghamry et al., 1970–1971). Root extracts, however, had no apparent estrogenic effects in doses as high as 20 mg daily (Grunert et al., 1969). A novel isoflavone, 5,2'-dihydroxy-6,7-methylenedioxyisoflavone, has been isolated from the seed balls of sugar beet (Chiji et al., 1986), but no animal or in vitro studies on this isoflavone were identified.

Beets are extremely high in carotenoids, which might conceivably inhibit the growth of fibroids. Human uterine smooth muscle cells express retinoic acid receptors, and all-*trans* retinoic acid causes a dose-dependent inhibition of proliferation in cultures of normal smooth muscle or cells from leiomyomata (Boettger-Tong et al., 1997). However, no clinical trials have tested carotenoids or retinoic acid in the treatment of fibroids.

Although none of the healers mentioned this, the use of beets may be an example of the principle of "sympathy," or the concept that "like cures like," i.e. the treatment for a condition will have some apparent similarity (color, shape, etc.) to the condition itself. This is also called the "Doctrine of Signatures": plants are thought to signal their uses through their appearance or behavior (Bellamy and Pfister, 1992). For example, white willow (*Salix alba* L., Salicaceae) and quaking aspen (*Populus tremuloides* Michx.) were thought to be useful for fevers because of the way that the branches of the former and the leaves of the latter shiver in the wind.

Beets and fibroids are similar in appearance and texture. In cross-section each exhibits a similar whorled pattern, and both are firm to the touch. Beets "bleed" when cut, which may add to the gynecological significance of this plant to traditional healers. In addition, menorrhagia (heavy menstrual bleeding) is a common symptom of fibroids. The prescription is usually for raw beet root juice mixed with molasses. This creates a scarlet potion that may visually reinforce the reported blood-building aspects of the remedy. Both beets and molasses, as well as other red, dark, or dense plant and mineral substances, have been recognized in some folk medical traditions as treatments for blood loss, or for "weak" or "thin" blood conditions as folk medical diagnoses (Snow, 1974; Crellin and Philpott, 1990).

There are other connections between beets and blood. Beeturia (pink or red urine caused by the ingestion of beets) is most common in patients with anemia, and there is preliminary evidence that beeturia may resolve in iron-deficient patients after iron supplementation (Sotos, 1999). Severe menorrhagia is sometimes associated with fibroids and can lead to iron-deficiency anemia. Perhaps the administration of a dose of beets could serve as an indirect diagnostic test for iron deficiency.

In addition, beets might serve as treatment for iron deficiency, especially when combined with molasses. Boiled beet roots contain 1.55 mg of iron per half cup, and blackstrap molasses contains 3.20 mg iron per tablespoon (Pennington, 1989). A “potion” for fibroids containing two cups of beet juice with two tablespoons of molasses would provide approximately 12.6 mg of iron, or about 70% of the U.S. Recommended Daily Allowance for premenopausal women (U.S. National Academy of Sciences Institute of Medicine, 2001). As previously noted, beets have high contents of carotenoids, many of which are precursors of Vitamin A. In populations deficient in both Vitamin A and iron, combining both supplements is more effective for treating iron-deficiency anemia than iron alone (Mejía and Chew, 1988; Karyadi and Bloem, 1996).

In conclusion, a wealth of information exists on ethnomedical uses of plants by traditional cultures. That information is transplanted as cultures migrate to new areas, and may change as healers and their patients adapt to new settings, experiment with new species, and seek to maintain a semblance of their healing framework. We suspect that if ethnomedical systems are evaluated with contemporary scientific tools, discoveries of major significance will be made, corroborating the value of age-old wisdom for modern times. While no clinical trials yet exist evaluating the efficacy of beets and molasses for the treatment of fibroids, these plants do contain several chemical compounds that may be pharmacologically active, possibly through hormone modulation, and are deserving of further study.

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