

## **Review Backs Flaxseed Lignans' Cancer Fighting Potential**

By Staff Reporter , 03-May-2010

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Flaxseed lignans might offer protection against breast, prostate, colon, and skin cancers while the soluble fibre they contain could help maintain steady blood sugar levels, found a review of research into the seed. An article, published in Comprehensive Reviews in Food Science and Food Safety, evaluated current research on flaxseed and any potential benefits it may have against diabetes and certain cancers.

Flaxseed has been the focus of increased interest in the field of diet and disease research due to the potential health benefits associated with some of its biologically active components: oil containing approximately 59 per cent a-linolenic acid (ALA) and the presence of plant lignan secoisolariciresinol diglycoside (SDG). The authors, researchers from Canada, England and China, summarized that the health benefits from flaxseed lignans are due to their antioxidant activity, primarily from the hydroxyl radical scavengers and also due to their estrogenic and antiestrogenic compounds and the structural similarity to 17-b-estradiol.

Their paper states that SDG, once ingested, is converted in the colon into active mammalian lignans, enterodiol (END) and enterolactone (ENL) which have shown promise in reducing growth of cancerous tumors, especially hormone-sensitive ones such as those of the breast, endometrium, and prostate. They concluded that flaxseed lignans could be a significant part of a treatment regimen for cancer based on the large number of small scale studies but they stress that further research is needed in clinical settings to support the role of flaxseed in cancer prevention in human populations.

And they called for further research to be undertaken to assess any potential adverse effects from over consumption of the seed: *“More in vivo studies are needed to ascertain the propitious effects of lignans secoisolariciresinol and to see if there are any dangers in possible overdoses.”*

### **Breast Cancer**

Studies (Adlercreutz and others 1992; Saarinen and others 2000) on flaxseed benefits for breast cancer that the authors reviewed showed the presence of flaxseed lignans in MCF-7 tumors and observed lignan binding to estrogen receptors (ER). This suggests, said the reviewers, that the lignan function may be ER-mediated. *“Although the lignans have been shown to be protective against breast cancer, minor structural alterations may influence overall activity (Saarinen and others 2005). Thus, many of the aforementioned benefits might be the results of specific structural features needed for lignans to bind to ER,”* they claim.

### **Prostate Cancer**

Evaluating studies looking at flaxseed lignans effect on prostate cancer, the researchers said that lignans enterodiol and enterolactone were believed to be partly responsible for

the growth inhibition of 3 human prostate cancer cell lines. They report that Morton and others (1997) found that higher enterolactone levels in prostatic fluid were associated with populations with a low risk of prostate cancer.

Another small clinical study, note the reviewers, showed that prostate cancer cell proliferation decreased and apoptosis increased in men fed 30 g of flaxseed per day, and they reported that a subsequent study by the same researchers supported the role of flaxseed in combination with a low-fat diet as a means to control prostate growth. Although not as extensively reviewed, the reviewers also report that flaxseed has been shown to inhibit colon and skin cancers in cell cultures and animal studies that have been conducted in this area.

### **Diabetes**

Low-glycemic-index foods containing soluble fibre may not only prevent certain metabolic ramifications of insulin resistance, but also reduce insulin resistance, noted the authors, citing a study whereby flaxseed was shown to reduce the postprandial blood glucose response in humans. *“A consumption of 50 g/d ground flaxseed by young females over a 4-wk period caused a reduction in blood glucose levels (Cunnane and others 1993). Similar findings were observed in postmenopausal women fed a 40 g/d flaxseed fortification diet (Lemay and others 2002),”* they stated.

### **Safety**

There has been concern noted over certain components of flaxseed such cyanogenic glycosides, said the reviewers. The authors stress that cyanogenic glycosides are not exclusive to flaxseed and are found in brassica vegetables and cassava, with many of the health concerns regarding cyanogenic glycosides stemming from studies showing that cassava was toxic to animals and humans. *“Cassava contains significantly more cyanogenic glycosides than flaxseed. Furthermore, the release of hydrogen cyanide from flaxseed would be minimal and below the toxic or lethal dose. At the recommend daily intake of about 1 to 2 tablespoons, approximately 5 to 10 mg of hydrogen cyanide is released from flaxseed, which is well below the estimated acute toxic dose for an adult of 50 to 60 mg inorganic cyanide and below the 30 to 100 mg/d humans can routinely detoxify,”* stress the authors.

They also cite a study from Daun and others (2003) that reported that a person would have to consume 8 cups (1 kg) of ground flaxseed to achieve acute cyanide toxicity.

Source: Comprehensive Reviews in Food Science and Food Safety

Published online ahead of print

**Title:** Flaxseed Lignans: Source, Biosynthesis, Metabolism, Antioxidant Activity, Bio-Active Components, and Health Benefits

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