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soy

Cruising Review

Soy: Publications and Research from SwissMixIt



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Soyfoods have long been recognized as sources of high-quality protein and healthful fat, but over the past 25 years these foods have been rigorously investigated for their role in chronic disease prevention and treatment. There is evidence, for example, that they reduce risk of coronary heart disease and breast and prostate cancer. In addition, soy alleviates hot flashes and may favorably affect renal function, alleviate depressive symptoms and improve skin health.

PDF Version of the webpage (first pages)

<https://cruisingreview.com/smx/soy.html>

## Soy Botanical Information

Soyfoods have long been recognized as sources of high-quality protein and healthful fat, but over the past 25 years these foods have been rigorously investigated for their role in chronic disease prevention and treatment. There is evidence, for example, that they reduce risk of coronary heart disease and breast and prostate cancer. In addition, soy alleviates hot flashes and may favorably affect renal function, alleviate depressive symptoms and improve skin health. soy, Glycine max L., soyfoods, nutrient content, isoflavones, cancer, heart disease, renal function, hot flashes, depression, safety, Tyrosinase inhibition, phytoestrogens, soy, antioxidant activity, apoptosis, benzo(a)pyrene, cytoprotective effect, anthocyanins, 2,2-diphenyl-1-picrylhydrazyl radical scavenging activity, flavonoids, isoflavones, tannins, germination soybean protein, menopause, nutrition, soy foods, vegetarian diets, protein quality, meat analogues, thyroid health, endocrine disruptor, selective oestrogen receptor modulator, cancer, additives, cosmetics, black soybean sprouts, anti-oxidation, whitening, safety

**Keywords:** soy, Glycine max L., soyfoods, nutrient content, isoflavones, cancer, heart disease, renal function, hot flashes, depression, safety, Tyrosinase inhibition, phytoestrogens, soy, antioxidant activity, apoptosis, benzo(a)pyrene, cytoprotective effect, anthocyanins, 2,2-diphenyl-1-picrylhydrazyl radical scavenging activity, flavonoids, isoflavones, tannins, germination soybean protein, menopause, nutrition, soy foods, vegetarian diets, protein quality, meat analogues, thyroid health, endocrine disruptor, selective oestrogen receptor modulator, cancer, additives, cosmetics, black soybean sprouts, anti-oxidation, whitening, safety

**Description and Research Abstract:** Soyfoods have long been recognized as sources of high-quality protein and healthful fat, but over the past 25 years these foods have been rigorously investigated for their role in chronic disease prevention and treatment. There is evidence, for example, that they reduce risk of coronary heart disease and breast and prostate cancer. In addition, soy alleviates hot flashes and may favorably affect renal function, alleviate depressive symptoms and improve skin health.

In other word, besides to providing omega-6 fatty acids, soybeans are among the few plant foods that provide omega-3 fat a-linolenic acids.

Vegetable soybean is rich in phytochemicals beneficial to the human being and is therefore considered a neutraceutical or a functional food crop.

In regards to the skin Soy is fantastic. Applying a cream containing soy to your face will boost collagen production and actually reverse signs of aging. Now it is considered to be an active ingredient in skin care as Vitamin C, retinol, Glycolic acid and Hyaluronic acid. Stimulating collagen production in the skin, which helps to increase the skin's supporting structure thereby increasing its thickness and elasticity. Inhibiting matrix metallo-proteinases, enzymes that break down network of protein, that make up the skin's support layer.

Clinical trials and animal studies showed that ingestion of soy proteins improves blood lipid profiles including lowering triglyceride, total and LDL cholesterol levels and increasing HDL cholesterol content.

Whole soybeans, with their major phytoestrogen flavonoids (genistein, daidzein, and glycitein) intact, are known to decrease both total and LDL cholesterol. Major early reviews, meta-analyses, and clinical trials in hyperlipidemic humans indicate a predictable range of decreases in serum lipids: total cholesterol (10-19 percent), LDL cholesterol (14-20 percent), and triglycerides (8-14 percent). A positive linear correlation between antioxidant activity and contents of total polyphenols and anthocyanins was established. The highest antioxidant activity was observed in the extracts of black and brown varieties, which also showed high levels of all polyphenol classes examined. Yellow seed had the highest total isoflavone content (3.62mg/g of dry material). The highest concentration of total daidzein was determined in black seeds (>2.0mg/g of dry material), and the highest total glycitein and genistein contents occurred in the yellow cultivar (0.53 and 1.49mg/g of dry material, respectively). According to our results, varieties of black and brown seeds could be of special interest not only for their large content of total polyphenols, ranging from 4.94 to 6.22mg of gallic acid equivalents/g of dry material, but also for their high content of natural antioxidants such as anthocyanins.

Based on animal studies, parabens concluded to be absorbed, metabolized, and excreted through skin. Parabens are additionally known to quickly absorb through the skin but cosmetic preparations can aid in this process. Therefore, the combination of substances found in modern day cosmetics and the parabens found within those cosmetics are aiding in the cutaneous absorption process of parabens. Parabens possess estrogenic characteristics and because estrogen is known to entice breast carcinogenesis, the inference can be made that the presence of parabens can also lead to breast carcinogenesis. As stated previously, retinoic acid promotes collagen which can potentially lead to abnormal cell growth (cancer). This is because collagen changes cellular microenvironment which releases biomechanical signals leading to the eventuality of a profusion of biological events. According to recent biomedical research, elevated presence of glutathione increases the resistance to oxidative stress, a common characteristic of most cancer cells (Traverso et al., 2013). This being stated, there is no coincidence that heightened glutathione levels are present among various types of tumors and cancers. Likewise, there is no coincidence that ingredients in cosmetics that penetrate the skin to alter cells in order to produce charismatic femininity would induce cancer development (cellular process). Each day countless women begin their day by applying cosmetics without really knowing what the ingredients entail or how this small amount of foundation could've meant life or death. The modern woman should be educated on the fact that blush, mascara, foundation, and many more is potentially the cause of countless cases of breast cancer diagnosed each year. The ingredients found in a variety of cosmetic products (parabens, retinol, and soy) are linked to countless methods of breast carcinogenesis including the enticement of pernicious substances (hyaluronic acid and estrogen) to litter the human body and the inclination of cytologic malfunctions (mitochondrial dysfunctions and chromosomal aberrations).

Overall, our results show that protein fractions in soybeans might have a higher role in soy-related cancer prevention as MMPi than previously expected. Being nontoxic and active at lower concentrations, the discovery of these heat-resistant specific MMPi proteins in soy can be of significant importance for cancer preventive diets, particularly considering the increasing use of soy proteins in food products and the controversy around isoflavones amongst consumers.

The general impression is one of certainty that both soy and soy isoflavones deliver many health benefits, including prevention of cardiovascular disease, cancer, and osteoporosis, as well as treatment of menopausal symptoms. The science is less absolute, however, and still evolving. Soy provides a complete source of dietary protein, meaning that, unlike most plant proteins, it contains all the essential amino acids. Traditional soy foods include tofu, which is produced by puréeing cooked soybeans and precipitating the solids, and miso and tempeh, which are made by fermenting soybeans with grains. Soybeans and soy foods contain a variety of bioactive components, including saponins, protease inhibitors, phytic acid, and isoflavones. Isoflavones belong to a class of compounds generally known as phytoestrogens, plant compounds that have estrogen-like structures.

Phytoestrogens are present in certain edible plants being most abundant in soy; they are structurally and functionally analogous to the estrogens. Phytoestrogens have been applied for compensation of hormone deficiency in the menopause.

Soy is a basic food ingredient of traditional Asian cuisine used for thousands of years. In Western countries, soybeans have been introduced about a hundred years ago and recently they are mainly used for surrogate foods production. Soy and soy foods are common nutritional solutions for vegetarians, due to their high protein content and versatility in the production of meat analogues and milk substitutes.

This work demonstrated that germination could enhance the physicochemical property and antioxidant activity of Gsp, which also displayed the remarkable cytoprotective effect. This study provided a fundamental basis for substantiating dietary of Gsp used for resistance to oxidation and hepatic injury.

Active ingredients in different lengths of black soybean sprouts were extracted with water. Concentrations of the main proteins and polysaccharides were determined by the Forint phenol assay and phenol-sulfuric acid assay, respectively. Anti-oxidizing capacities of the extracts were measured *in vitro* using the DPPH scavenging test and whitening capacity was measured *in vitro* using the tyrosinase inhibition test. No signs of allergic reactions were observed in the human patch tests. The optimum extract was obtained from bean sprouts grown to 0.5 cm. Extracts of black bean sprouts are safe and can be used as additives in anti-aging and whitening cosmetic products. The Supplement to Compendium of Materia Medica states that black beans can be beneficial to sperm and bone marrow production, muscle strength, hair growth, and the immune system. Modern scientific research shows that black beans have hypolipidemic and antioxidant properties and can be used to beautify the skin. Black bean sprouts are rich in calcium, phosphorus, iron, potassium and vitamins, where the level of vitamins increases in the budding process. The level of protein was found to change over the course of the germination process, peaking when the sprout measured 0.5 cm and reaching a highest protein content of 18 mg/mL. The analysis of variance showed that there was significant difference in the protein content between 0.5 cm sprout and black soybean seeds ( $p < 0.05$ ). This trend is consistent with its cosmetic effects. Proteins stored in black bean seeds (mainly glycinin and  $\beta$ -conglycinin) degrade during germination, concurrent with a slight increase in protein content in the 0.5 cm sprout extract. Subsequently, proteins are consumed gradually during germination. Antioxidant activity relates to the anti-aging effect and reflects the effectiveness of anti-aging on the human body. Tyrosinase inhibiting activity relates to the whitening effect and reflects the strength of its whitening effect. Effect on anti-H<sub>2</sub>O<sub>2</sub>-induced damaged skin fibroblast reflects the anti-aging effects on the human skin indirectly. In summary, evaluations show that soybean sprout extracts have strong cosmetic activity and can be used as anti-aging or whitening ingredient in cosmetics.

The extent of the changes of the principal metabolites, observed during whole grains germination, as well as the involved enzymatic activity are reported along this section. However, it should be underlined that most of the reported results refer to seedlings observed in the early germination stages and strictly depend on the species, seedling growth stage, germination conditions and laboratory techniques, which can greatly differ among experiments.

As a result, seed disinfection treatments were considered the major intervention in a multistep approach to reduce the risk of illness associated with contaminated sprouts. Calcium hypochlorite (20,000 ppm), the standard treatment for over a decade, and sodium hypochlorite solution (10,000–50,000 ppm) are widely used as disinfection treatments.

Soybeans (Glycine max L.) contain bioactive components such as high-quality proteins, fats, fibers, oligosaccharides, linolenic acid, saponin, lecithin, and isoflavone. These bioactive components can prevent stroke and heart disease as well as various life style diseases. Isoflavones are a main bioactive component of soybeans and have similar effects to estrogen which is effective in preventing osteoporosis and relieving menopausal symptoms. Soybeans have also been reported to help prevent prostate cancer in men as well as breast and uterine cancer in women.

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Some of the phenolic compounds are commonly found in legumes, especially in soybeans. Their structural similarity to 17- $\beta$ -estradiol (E<sub>2</sub>), the main female sex hormone, allows them to induce



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