# Physiological mechanism of soybean in preventing and treating chronic diseases

**FOR A LONG TIME**, soybean has been considered an important food in the Orient because of its high protein content and quality. Recently, many studies have shown that the incidence rate of degenerative chronic diseases, such as cancer, atherosclerosis, and osteoporosis, is higher among the Western people who consume more animal foods compared to Asians. It has been known that a diet rich in soybean products can lead to a reduction of cancer, cardiovascular disease, and osteoporosis. Soybean has many kinds of anti-disease components, such as isoflavone, protein, trypsin inhibitor, phytic acid, and saponin. Isoflavone is similar in structure to estrogen and has estrogenic and anti-estrogenic activity.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korea Soybean Digest*, v.17(1) pp.37-60.

# Bowman-Birk protease inhibitor

## content in soybeans and soybean products

**RECENTLY,** soybean Bowman-Birk protease inhibitor (BBPI) has gained growing interest among researchers because of its chemopreventive activity that is closely related to its chymotrypsin inhibiting activity. In this study, BBPI content in domestic soybean cultivars and soybean products was investigated by enzymatic method and competitive ELISA method. The overall chymotrypsin inhibiting activity and BBPI contents were 8462-14797 U/g and 400-780 mg, respectively. The correlation coefficient between C.I.A. and BBPI contents was 0.838. The BBPI contents on the basis of weight were a little higher in the hypocotyl of soybean than that in the cotyledon.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korea Soybean Digest*, v.17(1) pp.61-68.

# Does soybean isoflavone have adverse effects on humans?

**SOYBEAN** has been consumed in South Asia as a variety of traditional soyfood products. Epidemiologic evidence suggests that high intake of soy foods may protect human against breast, prostate and colon cancer, atherosclerosis, and osteoporosis. Based on many experimental studies, the Food and Drug Administration (FDA) authorized a health claim related to soy protein consumption. Diet low in saturated fat and cholesterol that includes 25 g of soy protein a day may reduce the risk of heart disease. Recently, however, Doerge and Sheehan expressed concern that while isoflavones, which have effects similar to the female hormone estrogen, may help prevent a range of condition including high cholesterol, they also lead to health problems in animals including alteration in sexual development of fetus, induction of thyroid disorders, increased breast cancer, and brain aging in elderly men.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korea Soybean Digest*, v.17(2) pp.9-19.

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# Effect of growth regulators and antioxidant mixture on the anther floating cultures of rice

**TO INVESTIGATE THE** effect of growth regulators and antioxidant on anther floating cultures of rice, anthers were cultured in liquid media supplemented with different growth regulators, and the effects of antioxidant mixture (Sigma Chemical Co.) on callus induction and plant regeneration were investigated. N6 medium with 1 mg/L 2,4-D and 1 mg/L kinetin was the best for rice anther floating cultures, which showed 48.5% of callus induction and 6.8% of green plant regeneration. Callus induction was not affected by antioxidant mixture in liquid medium, and antioxidant mixture (250 mg/L) was effective for the reduction of brownish callus and improvement of plant regeneration.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(2) pp.83-87.

# Transformation of rice mediated by *Agrobacterium tumefaciens*

## Effects of variety and acetosyringone

**THE CYTOSOLIC** glutathione reductase (GR) gene of *Brassica campestris* L. was introduced into several Japonica cultivars of rice by *Agrobacterium tumefaciens*, and a large number of transgenic plants were produced. Three-week old calli were co-cultivated with *A. tumefaciens* strain EHA101 carrying the plasmid plGR1. The efficiency of transformation differed from those of rice cultivars. A Japonica cultivar, 'Daeribbyeo', appeared to have the highest efficiency (42.5%) of transformation among the four cultivars tested. The addition of acetosyringone (50 muM) during co-cultivation was a key to successful transformation.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(2) pp.95-100.

# Callus and micro-crown bud formation of yacon in vitro from leaf explant

**EXPLANTS** of yacon (*Polymnia sonchifolia* Poepping & Endlicher) were cultured to determine differentiation conditions, and formative callus from the leaf was cultured to investigate regeneration and micro-crown bud formations. Basal MS medium was more effective for callus formation than 1/2MS and B-5 medium. Calli formations from the leaf, petiole, and lateral bud were more effective on MS medium supplemented with 1.0, 2.0 mg/L 2,4-D, and 0.2, 0.4 mg/L kinetin or BA than with 1.0, 2.0 mg/L NAA and 0.2, 0.4 mg/L kinetin or BA. Formative callus from the leaf proliferated about 70% on the medium supplemented with 1.0 mg/L BA in subculture for 3-4 months, but not on the medium supplemented with 1.0, 2.0 mg/L kinetin.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(2) pp.101-107.