

Soy & Health

DECEMBER 2005

ISSUE NUMBER 9

Conference highlights in this issue

In this issue of Soy & Health we are devoting 4 pages to a report on the 6th International Symposium on the Role of Soy in Preventing and Treating Chronic Disease. Highlights include: the ongoing research into the effect of soy on menopausal symptoms and bone health (page 4); the continuing debate regarding the role of equol, in particular the potential synergistic effect with pre- and probiotics (page 7); new and interesting soy proteins, lunasin and glyceollins (pages 5 & 6); and the use of a soy fermentation product as a potential treatment for peanut allergy (page 6).

US demand for soy products predicted to grow

According to a new report by the Freedonia Group new research and the approval of health claims will contribute to over 5% annual growth in demand for soy in the US over the next 5 years. The report entitled 'Soy Products and Markets' predicts overall demand for soy products to be \$6.75 billion in 2004, growing to \$8.65 billion by 2010.

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The report also suggests that soy-derived chemicals, including soy isoflavones, are the fastest growing segment. Currently chemicals make up 10% of the soy industry and the market was worth \$0.7 billion in 2004, but the sector has grown by 18% per year over the past five years. Freedonia predict that this rate of growth will slow only slightly to 13.5% per year over the next five years. Soy protein products are also expected to increase with 5.9% annual growth and this is largely attributed to the US Food & Drug Authority's (FDA) approval of a health claim linking consumption of soy to a reduced risk of coronary heart disease. The report also predicts that soy will play a bigger role in foods seeking to cater to new diet trends, despite the waning popularity of the low-carb/high-protein approach to weight loss.

Soybean oil, however, whilst representing 54% of the total oil market, is the only segment to have suffered a drop in demand. Between 1999 and 2004 the market fell by 0.6%. According to the Freedonia Group this is due to the maturity of the food market, competition from other edible oils and increasingly healthy eating habits that have been turning away from fried foods. The report suggest that the advent of trans fat labelling in the USA in January 2006 is encouraging manufacturers away from hydrogenated fats to non-hydrogenated fats and this may improve future demand for soybean oil.

For more information visit <http://www.freedoniagroup.com/>.



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Heart healthy chocolates

The Mars company has launched a new line of 'heart healthy' snacks in the US which combine the taste of real chocolate with ingredients formulated to promote a healthy heart. Created after 10 years of research, CocoaVia™ contains cocoa flavanols and plant sterols from soy which can help reduce LDL cholesterol levels and promote healthy circulation to maintain heart health. The product is also fortified with calcium, folic acid, vitamins B6, B12, C and E and is made by Mars Nutrition for Health & Well-Being, a new division of Mars.

All products are less than 150kcal per serving and contain at least 100mg of naturally occurring cocoa flavanols and 1.5gm of natural plant sterols from soy. Some studies indicate that cocoa flavanols may help influence blood clotting and promote healthy blood flow. Other studies suggest that cocoa flavanols can improve the health of blood vessels and reduce the oxidation of LDL cholesterol that can lead to clogged arteries. Natural plant sterols are clinically proven to lower blood cholesterol and are already used in products such as margarines and yogurts. The range of CocoaVia™ products includes a granola-based snack bar, original, crispy, and blueberry & almond chocolate bars, and chocolate coated almonds.

For more information visit the CocoaVia™ website is at <http://www.cocoavia.com/>.

New African soyfoods alliance

Soy industry leaders have launched a new partnership to improve the nutritional value of foods offered in 9 African countries and to foster long term business growth for Africa as well as the USA. The Soy in Southern Africa Alliance is a two year, public-private partnership led by the World Initiative for Soy in Human Health (WISHH) programme with support from the US Agency for International Development (USAID). US soy processors are also involved pledging technical knowledge, products, and equipment that will benefit at least 45 African companies.

The Alliance effort will help to improve nutrition and create sustainable economic development opportunities in Angola, Botswana, Lesotho, Malawi, Mozambique, South Africa, Swaziland, Tanzania and Zambia. Commercial partners include The Solae Company, Natural Products Inc, WhiteWave Foods/ Silk Soymilk, Soyatech, Hain Celestial Group, Malnutrition Matters, and the Services Group. Key African-based partners include the Council for Scientific and Industrial Research as well as regional, local and national government authorities, and targeted businesses and non-governmental organisations.

WISHH website: <http://wishh.org/news/index.html>.

Solae health claim petition withdrawn

The Solae Company has temporarily withdrawn its request to the US Food & Drug Administration (FDA) for a qualified health claim relating to soy protein consumption and cancer prevention. The company made its decision following an analysis of recent FDA health claim decisions. Solae believes the relationship between soy protein consumption and the prevention of cancer is strong but have decided to withdraw the petition at this time because they felt that the FDA's process is new and its evaluation process evolving. The company insists that the decision has nothing to do with their confidence in the science but is all about making sure their petition meets the current criteria for the restructured evaluation process so they can put forward the strongest possible case.

*The Solae
Company™*

www.solae.com



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Nutrition

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The Alpro Company

Alpro is the European pioneer in soybean products. A healthy series of Alpro soja and Provamel drinks, desserts and yoghurt is available in department stores and organic food shops in Europe.

Alpro has production sites in Wevelgem (Belgium), Issenheim (France) and Kettering (UK) with over 500 employees.

The Alpro Products

Alpro has been successful in various different European markets for a number of years now.

Our consumers are extremely conscious, particular about choosing products that improve their diet and vitality.

Alpro means a conscious choice:

- for daily investment in health
- with the best ingredients
- for long-life vitality
- with no compromises in taste or convenience

All products are 100% vegetable, free from cow's milk protein, free from lactose and contain no cholesterol.

The Alpro Traceability System

Alpro soja uses a traceability system to ensure that our products and ingredients avoid contamination with genetically modified organisms (GMO's). The system is approved and monitored by independent auditors cert id.

The Alpro Innovation and Expertise

Today's consumers are increasingly well informed. They demand consistent quality in products and innovation and strive to maintain good health through active lifestyles, wholesome foods and general well-being.

Today the role of nutrition goes way beyond the notion of correcting a deficiency. Now it is about maintaining health and well-being.

Based on in-depth consumer understanding, our R&D department works on the development of new products and on continuously upgrading our existing products, in order to meet the demand by health-conscious consumers for products that taste delicious.

Our Science & Nutrition Department plays a key-role in providing information to the customer concerning product composition, nutritional value etc. The department closely follows all research on soy and its components in order to communicate the facts to medical groups and consumers.

Discover the world of Vitality

www.alprosoja.com

www.sojanet.com



conference highlights



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The 6th International Scientific Symposium on the Role of Soy in Preventing and Treating Chronic Disease was held in Chicago from 29 October to 2 November 2005. Over 200 delegates attended 36 presentations and over 80 posters were presented covering all aspects of soy and health.

Osteoporosis

Previous studies from the University of Messina, Sicily have shown that genistein (54mg/day) is able to improve bone loss in early postmenopausal women. In a new longer two year study using a larger group of women interim results after one year confirm these findings. Genistein increased bone mineral density in the femur and lumbar spine. Genistein also had a positive effect on hot flushes and no effect on the endometrium.

Another two year study carried out at the University of South Dakota also in early postmenopausal women appears to support positive effects on bone health. Subjects in this study ate a normal diet supplemented with 40g of soy (90mg aglycone) or casein daily. The results from year 2 were significantly different from year 1 with the soy group appearing to lose less bone density by reducing bone resorption. However, the effects of soy may be site specific as the effects were only found in the spine and not in the hip.

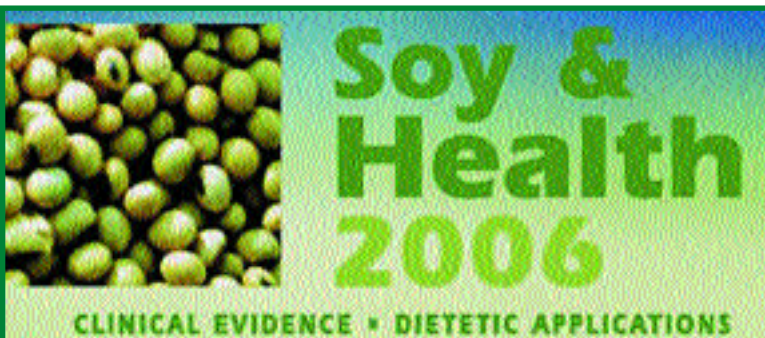
In addition, researchers at Creighton University Medical School, Omaha looked at the effect of soy protein with or without isoflavones on BMD in postmenopausal women aged 55-72 years over a 2 year period and found no significant difference in BMD between the groups. These studies appear to confirm that age past menopause seems to be important when assessing the effect of soy on bone health. Studies using older women have generally shown no differences in bone mineral density (BMD).

Menopausal symptoms

Most studies on the menopause focus on hot flushes. A new study from the Universities of Leeds and East Anglia in the UK used a prospective assessment of the severity and frequency of menopausal symptoms combined with retrospective measurements of quality of life. Using a high dose of isoflavones (100mg) in supplement form in postmenopausal women over an 8 week period the researchers found no significant difference between the soy and the placebo for total symptoms or for the psychological, vaso somatic or general somatic sub scales. There was also no difference between equol and non equol producers. Soy intervention, however, did show an effect on sleeplessness and feelings of being "easily stirred up". Frequency of sleep problems was significantly reduced after 4 weeks of soy isoflavones with no further improvements at week 8. In addition, the frequency and severity of hot flushes were also significantly reduced particularly in those women with more than 5 hot flushes per day. The results suggest that soy isoflavones are effective for estrogen related symptoms. The sleep effects may be related to the reduction in hot flushes.

A re-evaluation of 11 published studies using well characterised isoflavone-containing supplements concluded that higher genistein ratio extract products (10-15 mg of genistein) are more effective in reducing hot flushes in postmenopausal women than supplements containing high daidzein or formononetin and low genistin/genistein. It was concluded that evaluation of isoflavone effects should be related to the content of individual isoflavones within the supplements.

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CALL FOR POSTER ABSTRACTS

Researchers are invited to submit abstracts (max 300 words) for poster presentations.

Visit <http://www.soyconference.com> for the latest information or contact info@soyconference.com

THE 4th INTERNATIONAL CONFERENCE Soy & Health 2006 Clinical Evidence – Dietetic Applications

12-13 October 2006

Radisson SAS Hotel, Dusseldorf, Germany.

This conference is primarily developed for those with a nutrition, dietetic or clinical background, and for those in marketing and development of soy foods, soy ingredients and soy supplements. Special focus will be advice for the food industry on producing tasty and healthy foods as well as practical tips for health care professionals and nutritionists on ways to include soy in the diet.



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Soy isoflavones and cognition

Soy isoflavones have a direct impact on the central nervous system and affect estrogenic activity. Endogenous estrogen levels are important, however, in helping to determine whether soy has an estrogenic or antiestrogenic effect. E.g. in postmenopausal women low levels of endogenous estrogen produce an estrogenic effect of soy, whilst in premenopausal women levels of endogenous estrogen are high and soy has an antiestrogenic effect. There are also established gender differences in cognitive function and estrogen fluctuations are associated with cognitive function. However, there are very few published human intervention studies on soy and cognition and the differences between these studies make it difficult to come to any firm conclusions but generally they suggest that soy may have a beneficial effect in specific cognitive areas.

The results from 3 studies at the University of Leeds, UK were presented which appear to confirm these effects and strongly suggest that soy isoflavones may exert stronger cognitive effects in postmenopausal women compared to premenopausal women. The effects seem to be related to improvements in memory and certain aspects of frontal lobe function which is associated with verbal fluency. Variables such as age, time of exposure, dose and administration of isoflavones are important factors and further long term trials are needed to determine whether these effects in relatively short term interventions will be sustainable in the long term.

A randomised, placebo controlled double blind pilot study from the University of Wisconsin provided some additional data from 30 cognitively healthy older adults (both men and women). Subjects received either 100mg/day of soy isoflavone or placebo for 6 months. Cognitive evaluations were conducted at baseline, 1, 3 and 6 months after initiation of the study. Cognitive data were used to calculate the change from baseline. Using a test category of fluency, women on soy outperformed women on placebo but men on treatment did not differ significantly from men on placebo. In addition to gender differences, a genetic risk factor for Alzheimer's disease, the ApoE gene was also found to influence the response to isoflavone treatment.



Cancer

Animal (rat) studies (University of Ulster, EU PhytoPrevent Study) suggest that perinatal exposure to isoflavones has no effect on tumour development but post weaning and life-long exposure to isoflavones delays tumour development and reduces tumour incidence.

In humans soy appears to have a protective effect for high soy consumers. In a case controlled study (University of Southern California) of over 1200 Asian American women in Los Angeles County participants provided details on menstrual and reproductive factors, use of HRT, family history, body size, dietary history, and other lifestyle factors. After adjusting for dietary and non-dietary variables it has previously been found that risk of breast cancer is significantly inversely associated with soy intake during adolescence and adult life, with significant risk reduction found in pre- and postmenopausal women. Further analysis in postmenopausal women showed that the benefits of soy intake are found only in women with low body size and non-users of menopausal hormones. However, the benefit of soy does not appear to be high enough to overcome the risk of high body size on breast cancer. These results seem to contradict other studies which have found a protective effect of soy with higher BMI, but the difference could be due to increased amount of weight gain rather than BMI itself.

New lines of research are investigating specific components of soy in respect to cancer. Researchers at the University of California have identified a new cancer preventive peptide in soy (43 amino acids) called Lunasin. They have demonstrated its efficacy in mammalian cells and in a mouse skin cancer model and it appears to be effective against chemical carcinogens and oncogenes. It appears to be absorbed and distributed in various tissues including those that are targets for the most common cancers, and is bioactive in the blood and liver of rats. The next stage is to determine oral bioavailability and its effectiveness in humans.

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conference highlights



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A team at Wake Forest University are also investigating the antiestrogenic effects of glyceollins. Glyceollins are phytoalexins present from stressed soybeans. Using postmenopausal monkeys they evaluated the antiestrogenic effects of glyceollin-enriched soy protein on markers for cancer risk. Preliminary findings suggest that glyceollins may enhance the antiestrogenic properties of standard soy protein isolate in the breast and uterus.

Some animal studies have suggested that soy isoflavones may increase the risk of endometrial cancer. However studies in monkeys at Wake Forest University School of Medicine spanning up to 3 years (equivalent to 10 human years) using up to 10 times the dietary exposure of soy isoflavones have shown no uterotrophic effects. In addition, endometrial proliferation data shows that isoflavones are not estrogenic in monkeys. This was confirmed in a two year trial of women given soy protein isolate of up to 58 mg/day which showed no association between serum isoflavone concentrations and endometrial proliferation. These results suggest that there is not a significant uterotrophic effect of dietary soy isoflavones in the humans or monkeys. The researchers hypothesize that there may even be a protective effect in the presence of higher endogenous or exogenous estrogens.



Cardiovascular disease

A study (Stanford University) of adults with elevated cholesterol concentrations (160-220mg/dL) and not on cholesterol lowering drugs compared plasma lipid responses between two commercially available soy milks, one made using whole soybeans and one using soy protein isolate, with a low fat dairy milk. The results showed a modest 5% LDL cholesterol lowering effect from both types of soy milk relative to the dairy milk when provided in amounts equivalent to 25g protein per day for 4 weeks. However, whilst an LDL cholesterol lowering effect was observed, the question remains as to how much was due to displacement rather than to actual consumption of soy milk.

An update of James Anderson's (University of Kentucky) 1995 meta analysis indicated that in the last 10 years most studies have reported smaller reductions in LDL cholesterol than the 12.9% suggested by the meta analysis. In reviewing the 57 studies published since 1995, Anderson concluded that most of the studies report serum lipoprotein changes with average reductions from baseline of 7.8% compared to reductions in the controls of 4.1%. However, there are differences in the dose and duration of soy consumption as well as differences in the type of soy protein used in these studies. This appears to affect cholesterol lowering. For example, some studies used baked soy protein rather than non-baked and whilst this still lowers cholesterol, the effect appears to be much reduced. One reason for this is that intact soy peptides have a significantly greater cholesterol lowering effect than fragmented preparations; baking may fragment the most active peptides. To achieve a daily consumption of 16-50mg isoflavone and a 5-7% reduction in LDL cholesterol it is recommended to consume at least 10g soy protein twice per day. The best choices are soy milk, tofu, yogurt, edamame soy beans, soy nuts or soy foods such as smoothies.

Immune Function

Researchers at the Mount Sinai School of Medicine, New York are investigating the effectiveness of ImmuSoy, a koji fungus (*Aspergillus oryzae*) and lactobacteria soybean fermentation product based on traditional Japanese fermentation technology, as a potential novel treatment for peanut allergy. Experiments using peanut allergic mice showed that ImmuSoy has a dose dependent protective effect against peanut anaphylaxis in the mouse peanut allergic model.

In a study of postmenopausal women (Washington State University) soymilk and isoflavone supplements were found to modulate beta cell populations, plasma interferon gamma concentrations (both markers of immunity and oxidative stress) and appeared protective against DNA damage.

Glycemic control

Two studies were presented that showed improved glycemic control with soy in healthy subjects. The first study, carried out at the University of Hong Kong, on 173 community based postmenopausal Chinese women showed that habitual soy intake improves glycemic control in women with a higher base line fasting glucose level. Surprisingly a Japanese study on 43 healthy men (fire fighters) also showed a beneficial effect of soy rich diets on insulin resistance.

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conference highlights



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Obesity

Researchers at the University of Kentucky compared soy vs casein meal replacements for the weight management of obese women. In a 16 week randomised controlled trial, 35 women (BMI 30-40) following an intensive weight loss programme achieved a steady weight loss of about 2 lbs per week. There was no difference between the casein or soy-based diets in the amount of weight lost or in body fat loss. Those on the soy diet had a slight tendency to bigger blood pressure reductions and lipid reductions than those on the casein-based diet but the differences were not statistically significant.

Inflammatory disease

An interesting study from the Manitoba Institute of Child Health suggested that maternal soy exposure may have long term beneficial benefits on renal inflammation and disease progression in young adult offspring. Using a rat model of genetically determined renal disease the researchers compared rats on a soy-based diet with a casein based diet. They found maternal soy protein resulted in less proteinuria indicating better renal function. They also found that soy protein in the weaning diet of these rats reduced inflammation.



Equol

Debate continues over the significance of equol, a metabolite of diadzein, and its role in the biological effects of soy. Some studies indicate that there may be possible benefits to health if you are one of the 20-40% of the population who produce equol after consuming soy while other studies show no differences between equol and non equol producers. Recognising the essential role of gut microflora in isoflavone metabolism, particularly equol, a study from Australia (University of Wollongong) investigated the role of a probiotic (yogurt) or a prebiotic (resistant starch) in conjunction with soy on isoflavone metabolism and lipids. In a randomised crossover study 31 hyperlipidemic men and postmenopausal women were studied. Intake of soy alone was compared with either soy + probiotic or soy + prebiotic treatments for effects on plasma and urinary isoflavones and plasma lipids following a test soy meal. Five weeks of soy intake significantly increased circulating plasma genistein and daidzein levels, but did not affect plasma or urinary isoflavones after the test meal. There was a trend towards increased plasma daidzein and genistein levels with the probiotic and prebiotic treatments but no overall statistically significant effects. Neither treatment induced or increased equol production, although there was a trend with probiotic treatment for increased plasma equol in equol producing subjects. Despite the lack of significant effects on isoflavone bioavailability, total cholesterol was significantly decreased with both probiotic and prebiotic treatments and LDL cholesterol was most significantly decreased with prebiotic treatment indicating a synergistic action between soy and prebiotic and probiotic intake for lipid lowering.

A Japanese study examining the association between urinary excretion of equol and the risk of breast cancer in Japanese women (Gifu University Graduate School of Medicine) found that excretion of equol was moderately positively associated with urinary levels of daidzein. This was higher in those women with cancer than in the controls suggesting that the ability to produce equol may be associated with the risk of breast cancer.

Infant feeding

A separate one day workshop was held before the main symposium to explore the state of our current knowledge on the effects of soy on growth and development. The aim of this symposium entitled "Effects of soy on growth and development: how much do we know?" was to identify the important health issues related to early soy exposure and the research needs aimed at resolving unanswered questions. The symposium covered important issues such as the the role of estrogens in development, clinical safety, the usefulness and appropriateness of animal models in this kind of research, the role of equol, and information on pilot and other studies currently underway in the USA and Japan.

PRELIMINARY ANNOUNCEMENT

7th International Soy Symposium on the Role of Soy in Health and Disease Prevention will be held from 7-9 March 2007 in Bangkok, Thailand in conjunction with the 5th Southeast Asia Soyfood Seminar & Trade Show 'Science to Market - Opportunities in Asia'.

Further information will be available at <http://www.soyfoodforum-sea.com> and <http://asa-connect.com.sg/~firstlook/Notice> e-mail: info@soyfoodforum-sea.com



16–17 February 2006

Micro & Nano Encapsulation Industry Applications in Pharma, Food & Beverage, Cosmetic, Personal Care and Agro-chem. Pre-conference workshops -15 February, London, UK. Contact: enquire@iqpc.co.uk or visit: <http://www.iqpc-pharma.com/GB-258/2020>.

23–26 March 2006

Natural Products Expo West, Anaheim, California, USA. Contact new Hope Communications, e-mail: tradeshows@newhope.com or visit: <http://www.expowest.com>.

4–7 April 2006

Anuga Foodtec Messe Koln, Cologne, Germany. Visit: <http://www.anugafoodtec.com>.

23–25 April 2006

USB/SANA 13th Annual Soy Symposium: Innovations in the Market Place: Reaching the Consumer Today, Dallas, Texas, USA. Contact: Christina Blue at christina@soyfoods.org or visit: <http://soyfoods.org/events.html>.

30 April–3 May 2006

9th AOCS Annual Meeting & Expo, St Louis, Missouri, USA. Contact AOCS, tel: +1 217 359 2344, e-mail: meetings@aoacs.org, website: http://www.aocs.org/meetings.annual_mtg.

4–6 May 2006

2nd International Congress on Functional Foods and Nutraceuticals, Istanbul, Turkey. Contact Seles Kongre Org. Hizm Ltd, Sti, tel: +90 212 232 2121, e-mail: info@cffn.org or visit: <http://www.cffn.org>.

9–11 May 2006

Vitafoods International 2006, Geneva, Switzerland. Website: <http://www.vitafoods.eu.com>.

30 May–1 June 2006

IFIA Japan 2006, Tokyo, Japan. More information visit: <http://www.ejkrause.com/events/8106.html>.

4–5 June 2006

Short Course - Soyfoods: Ingredients, Preparation and Utilization, Londrina, Parana, Brazil. Contact: membrane@membraneworld.com or visit <http://www.membraneworld.com/Soyfoods-Brazil.htm>.

24–28 June 2006

Institute of Food Technologists Annual Meeting and Food Expo, Orlando, Florida, USA. Contact IFT, tel: +1 312 782 8424, e-mail: info@ift.org, website: <http://www.ift.org>.

11 August 2006

Practical Short Course - Soy Drink Technology for the Dairy Alternatives and Soft Drinks Market, Hilton Hotel, Istanbul, Turkey. Contact: soyfoods06@scarlet.be

14–16 August 2006

World Conference and Exhibition on Oilseed and Vegetable Oil Utilization: Processing, By-Products, Biodiesel, Specialty and Functional Oils, and New Applications & Technologies, Istanbul, Turkey. Contact AOCS, e-mail: meetings@aoacs.org, website: http://www.aocs.org/meetings.annual_mtg.

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Soy & Health is published by THV Soy Conference and is distributed by e-mail free of charge five times a year.

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