

# Soy at the Crossroads

*The pendulum swings back from excess supplementation to downright formulating affordable, tasty and nutritious meat products.*

by Henk Hoogenkamp

It is not an overstatement to conclude that at the onset of the 21<sup>st</sup> century, the US soy protein corporations have fallen victim to proliferation of processing technology, ecological disputes and hyping nutritional benefits. Yet in terms of economics and organoleptical performance, soy protein ingredients remain undisputed and offer cost-effective solutions and technological supremacy. It is obvious that US soy protein companies have come to a crossroad and will be expected to quickly address an avalanche of negative perceptions head-on. The overriding question is how to reposition the benefits of functional soy protein while also accepting the fact that foreign competition has permanently eroded profit margins, much to the chagrin of shareholders.

## Chinese Importance

For starters, senior management of US dominated soy protein companies such as Solae (a DuPont-Bunge alliance) and

to a lesser extent ADM and Cargill, failed to realise the significance of Chinese made soy protein isolate. Instead of accepting reality, these companies said these foreign made protein ingredients did not meet global standards. While this might have been true early on, the rapid progress of Chinese soy protein technology has clearly changed the landscape and as a result significant parts of export markets have been under fierce price attacks.

In a bizarre change of its priorities, the US soy protein industry spent millions of dollars to support research in order to establish a medical platform to tout the many benefits of intrinsic soy protein consumption and its effect in avoiding some degenerative diseases. Many years later, it is now quite obvious that the millions spent have gone down the drain, as soy research has been highly scrutinised in the past few years, because many studies do not show as large of an impact on health as previously thought.

Despite the fact that the soy marketing gurus positioned soy as an upscale health food, newly released research shows that soy has only a minimal effect when it comes to lowering cholesterol, nor is there clear evidence that it mitigates the effect of osteoporosis or reduces hormonal induced hot flashes in women.

Actually, the negative connotation doesn't stop

there: in 1999, the FDA approved a claim that soy might reduce the risk of heart disease. However, two of its experts, Dan Sheeman and Daniel Doerge wrote a letter of protest against the agency's endorsement, noting that some of the soy isoflavones (a plant form of estrogen) present in soy demonstrated toxicity in estrogen-sensitive tissues and in the thyroid.

## High Dose Danger

From there it can be hypothesised that high doses of soy consumption and the resulting lack of zinc can cause or aggravate autoimmune diseases such as Hashimoto's hypothyroidism, fibromyalgia and rheumatoid arthritis.

The key to unlocking soy's health benefits has changed in the past few months. From the overbearing soy marketing hype trying to make consumers indulge and increase their daily soy intake, the pendulum is switching back to moderation. The real culprit, then, are the senior management executives of American soy companies, which has dragged its feet and is still trying a multi-tier approach by continuing on the path of touting soy protein as the ultimate health food instead of accepting reality and refocusing on the importance of soy protein usage in processed meat products.

## Key to Moderation

Come to think of it, the processed meat industry holds the soy key to moderation. True

enough, in processed meat products, soy protein is a remarkable ingredient, endlessly versatile in overcoming technological hurdles, while being a wonderful supplement to traditional meat based diets. Functional soy protein ingredients such as soy protein isolate (90%) and soy protein concentrate (65%), have an inclusion level seldom exceeding 2%. When used properly, this low inclusion level ascertains a high degree of fat:water stability and provides textural support in emulsified products such as hot dogs and bolognas.

For these applications, soy protein has excellent hydrophilic (water-loving) and lipophilic (fat-loving) properties that – when used correctly – shows great synergistical effect with salt-solubilised meat proteins, as well as interacting favourably with hydrocolloids such as carrageenan at a 0.2% inclusion level. Moreover soy protein ingredients uniquely mimic lean meat and as such are universally used in whole muscle meats such as hams and roast beef.

## Unique Value

Not to be outdone, functional soy protein ingredients now also increasingly find their way into further processed meat and lifestyle foods. Especially fast food restaurants have discovered the unique value of soy protein. Here the advantages are plenty: improved moisture retention and holding time, economics and improved nutritional profile. As a



Sliced corned beef that contains only 4% fat, in a plastic film-wrapped 'aroma-box' tray. The product contains soy.

Source: Innova Database

matter of fact, the author of this article researched and pioneered on behalf of McDonald's Asia a rather revolutionary concept by combining ground beef and or chicken with local flavour preferences and structured soy protein. Despite wide scepticism of McDonald's corporate offices in Oakbrook Il., these formulated menu board foods became a resounding success. Ever since the official introduction of the Burger McDo in the Philippines in 1995, restaurant sales have dramatically grown and in fact the Burger McDo is outselling the 100% beef patties by as much as 2 to 1. At first marketing was slow to respond, but by 2005 McDonald's introduced the umbrella brand 'Prosperity Burger'. These formulations are now promoted across Asia. The formed further processed meat products such as those made from beef, pork and chicken, and based on pioneered technology by diffusing soy protein and specific flavours into the highly complex meat membranes, offer foods that are tasty, nutritious and highly affordable. There is an unmistakable trend that these diffusion technologies now also find their way in the US. Integrating lean meat and vegetable protein sources will most likely be the next generation of foods that appeal to the new generation of consumers who want to feel good about themselves.

### Early Acceptance

For international markets, the real breakthrough for soy protein applications in processed meat occurred in the early 1990s. Acceptance of soy protein in meat and poultry products in the US and Canada was at a markedly slow process.

There is no denying the fact that the presence of soy protein on meat labels still pro-

vokes certain negative consumer responses. This is especially true in North America. Perception often becomes reality and this is something that has affected universal acceptance of soy protein (containing) meat products. A very strange phenomenon, because unlike meat products that contain soy protein, quite often in other foods such as nutri-bars and health beverages, the same consumer perceives the presence of soy as a major plus! Seemingly the road to general acceptance is a very slow process and history has shown that it might take yet another generation or two before the persistent lingering negative perception in consumers' minds has disappeared. The pitfalls range from quality image, adulteration and flavour issues. It is therefore imperative that the US soy industry continues its search to improve flavour profile, including genetical engineering and bio-technology, while at the same time trying to stop the subtle but strong 'endorsements' of uncontrolled high soy protein intake by consumers in the form of supplements and isoflavone pills.

### Meat Application

It is estimated that of the world's soy protein production available for food production, a staggering 60% of functional soy ingredients is being used in processed meats. This clearly indicates that meat processors around the world have embraced this versatile protein as the ingredient of choice to improve economics by lowering use of high priced lean meat, while maintaining organoleptical quality.

It is further estimated that approximately 70% of the above mentioned figure is used in emulsified meats. These figures clearly indicate that relatively low inclusion levels of soy

protein generally provide long-term sustainable cost benefits. The remainder of the soy protein market for meat products is sold to the rapidly growing lifestyle and coarse ground products such as hamburgers and chicken patties. A relatively small, albeit important market is soy usage in whole meat products and dry fermented sausage.

### Surprising Havoc

Insiders saw it coming, but it still took US soy protein companies by surprise: Chinese made soy protein isolate have played havoc for most of the traditional US soy protein companies.

After many years of underestimating the power of the awakening giant, US soy companies joined forces with some Chinese soy protein companies and now produce these premier protein sources through a number of joint ventures. Ironically, the soy protein isolate technology was largely obtained by proliferation of the same US owned and dominated processing technologies.

As a result, there are now very many soy protein companies who have eaten into once US dominated soy protein markets such as Russia, Eastern Europe, South Africa and yes, now Chinese made soy protein ingredients are now also very successful in the US. Of course, the marketing and sales of these Chinese origin functional soy proteins are coordinated and skilfully positioned, including technical application expertise, by US representative companies such as Protein International St. Louis Mo., who still implement proven values of putting customer interests first.

### Meaty Future

Soy protein usage in processed meat and poultry prod-

ucts will continue to enjoy a bright future. Moderation in inclusion level will be key however, and this is exactly what formulated meat products do offer. This holds equally true for so-called 'lifestyle' foods as a vehicle to address nutritional, environmental and ideological issues that are important for new generation consumers. As such, soy protein companies need to implement a discipline to accept the fact that moderation in usage level, probably is the safest way to move forward and cherish the fruits of true sustainable long-term business.

Let's face it: the burgeoning world population needs tasty and nutritionally balanced yet affordable foods. Soy protein will be essential to assist in delivering these values. But in order to accomplish these goals, it will be essential to address emerging issues. For example, it has been a steady but unstoppable process that mega-corporations have taken over the world's food supply.

This is not necessarily a bad thing. On the contrary! However, greed and self-enrichment by a few, needs to be curtailed as not to make soy take the deep plunge into highly controversial and sensitive topics such as deforestation of the Amazon to accommodate Brazil's booming soybean production.

Not to mention the great impact of politically driven support for massive agricultural subsidies and not to forget brainwashing the consumers' mind by making them believe that soy protein is the answer to avoiding nearly all degenerative diseases. ♦

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