THE DIGEST

INFORMATION *FROM THE SOURCE* ON PEPTONES & HYDROLYSATES

APRIL 2023

Solabia's 2023 challenges & opportunities

2022 was an excellent year for peptone activity and market penetration as Solabia was able to demonstrate strengths in supply chain management, strategic raw material availability and exploit the unique aspect of peptone production dedicated at 2 industrial sites.

2023 has already presented unique challenges due to **inflationary factors** in nearly every sector associated with production, continued tension on some strategic components and **geopolitical realities** that have resulted in **unprecedented energy costs**. This latter area has significant implications on peptones as they require important energy expenditures during processing : digestion and thermolysis steps in particular, not to mention spray drying.

On the other hand, Solabia's wise sourcing of raw materials resulted in **no customer backorders** in 2022 and will continue to be an important added value in 2023. **Supply chain security** has truly been identified as the n°1 issue in a post-pandemic market.

Solabia's unique certification status benefits all fermentation clients

The evolution of Solabia's Halal and Kosher certification to a **totally continuous operation** also translates into important gains for customers, keeping in line with the new-found supply chain security priorities.

New Zealand origin casein will continue to represent a **strategic** yet **highly volatile** peptone component, subject to intense speculation and murky availability. Given the context of its production, it is subject to a variety of factors such as seasonal elements including droughts, animal husbandry and a host of man-made or natural events that can ultimately impact on milk production.

Simple economics will invariably also factor into casein availability depending on the demand for **milk powder** or **solids** in markets like China. These commodities in turn impact the amount of raw milk that can be dedicated to more complex production like casein.

Solabia's successful participation in RAFT® 14

Solabia peptones were showcased in our first post-pandemic event : Recent Advances in Fermentation Technology (Orlando, Florida) last November 2022.

The specialized RAFT® exhibition & symposia brought together more than **300 people** with ties to the fermentation industry and provided a unique opportunity to share news and tendencies that involve peptone use.

RAFT® 14 : Nov. 6-9, 2022
Photo courtesy of SIMB

A great venue to exchange with the industry
Photo courtesy of SIMB

Non-allergen, Non-GMO peptones associated with **Kosher and Halal certification** remain criteria for selecting fermentation substrates, but the impact of Covid, rising raw material prices and the availability of certain specialized references like **Acid Hydrolysate of Casein** were also topics of discussion. The quality of the symposia on topics of pertinent interest, combined with a strong industry presence in the form of tabletop stands made for an excellent event. The next edition is scheduled for **Oct.29—Nov. 1, 2023** in Naples, FL and Solabia will be present.

Summary :

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Allergens : WHO cites hydrolysate risk but not peptones

The use of non-allergen substrates has been a consistent tendency for new fermentation projects, in order to market products under a totally Non Allergen label.

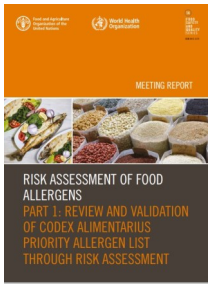
However, there is some debate as to whether peptones used as fermentation substrates qualify as a pertinent allergen if the peptone itself is not consumed as a food, but merely contributes, as a processing aid, to the growth of a microorganism. In the case of **probiotics** that are assimilated as food products, the question remains. The WHO, in their 2022 Meeting Report "**Risk Assessment of Food Allergens Part I**" reviews the Codex Alimentarius risk assessment.

While not addressing peptones specifically, nor their role as a fermentation substrate, the report states that hydrolysis in general can **reduce the probability of allergic reaction** provided the process and its outcome are understood.

Hydrolysates are unlikely to stimulate allergenicity if the fragments produced are **too small to cross-link IgE** and do not aggregate. In addition, heat treatments above 90°C (most peptones are thermal treated at 90 - 100°C) could decrease allergenicity for some allergens. But it is unlikely that heat alone would suffice.

There is also data from development of vaccines indicating that the immune system is unable to mount a strong humoral response towards peptides of less than roughly 13 amino acids in length (Purcell *et al.*, 2003).

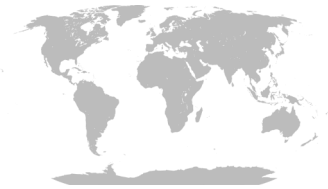
So where does this leave peptones used in fermentation ? This is unanswered but it appears unlikely that peptones, in their role as a **N source** in fermentation media would be a major risk. But in the absence of definitive data, the use of non-allergen peptones (**Broadbean, Potato, Pea**…) remains an efficient solution.



The report also brings to light the difference between priority allergens and "B listed" allergens. Surprisingly, the WHO Experts Committee recommends that **soybean be removed from the global list of priority allergenic foods for labelling purposes** based upon the generally low prevalence of soybean allergy, the lower potency of soybean proteins to trigger allergic reactions as opposed to other protein fractions in other priority allergens, and the low proportion of anaphylaxis related to soybean allergy in all regions. Regional considerations for soy allergen is instead recommended.

"… While not addressing peptones specifically, nor their role as a fermentation substrate, the report states that hydrolysis in general can reduce the probability of allergic reaction provided the process and its outcome are understood.."

NON-ALLERGEN PEPTONES MAY STILL OFFER THE BEST SOLUTION FOR MARKETING NON-ALLERGENIC FINAL PRODUCTS LIKE PROBIOTICS



Probiotic foods in India : strains and benefits

Continuing on from the last edition of **The Digest** where probiotic beverages in India were featured, traditional Indian diet contains many fermented foods that contain probiotic strains.

Fermented ragi (*ambali*) : cooked ragi flour, cooled and mixed with beaten curd or buttermilk, along with jeera, salt & chopped onions. A rich source of **starch, protein** & **B-complex vitamins**.

Pokhala bhaat : fermented rice gruel, also known as ***pazhan kanji*** or ***panta bhaat*** ; fermented rice that has been soaked overnight in a clay vessel. Lactic acid produced by the bacteria present break down the rice, increasing the **bioavailability** of several minerals.

Probiotic foods consumed in India

Food	Strains involved
Ambali	*Leuconostoc*, *Pediococcus* and *Lactobacillus*
Panta bhaat	*Lactobacillus* spp.
Gajar ki kanji	*Lactobacillus plantarum*
Hawaijar	*Bacillus subtilis* (dominant functional bacterium), *Bacillus licheniformis*, *Bacillus cereus*
Gundruk	*Lactobacillus cellobiose, Pediococcus pentosaceus, Lactobacillus casei, Lactobacillus plantarum*

https://www.navhindtimes.in/2023/01/07/magazines/zest/indian-probiotic-foods/

Gajar ki kanji : a seasonal dish prepared by boiling purple carrots. Carrot pieces are placed in a jar with mustard powder, salt, asafoetida & red chili powder and left to ferment in the sun for 4-5 days. Rich in **β-carotene, vitamin C** and **potassium**.

Hawaijar : prepared from soybeans that have soaked for 12-24 hours. The cooked beans are then prepared in an elaborate fashion and wrapped in fig or banana leaves and packed into bamboo baskets. Fermentation takes place from 4-5 days in the sun or buried in paddy straw. Rich in a variety of microorganisms and **protein, vitamins, minerals** and **fiber**.

Gundruk : fermented green leafy vegetables (mustard, radish, cauliflower). Prepared as a dry powder after fermentation in jars under anaerobic conditions. Rich in **vitamin B, potassium & calcium**.

The influence of the vegetarian diet is clear with these naturally-containing probiotic foods.

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