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To: [Elizabeth Cuff](#)
Subject: BIONEWS FOOD issue 7: Taste enhancers- Synergism
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Taste Enhancers— Synergism

One of the most interesting properties of taste enhancers is their capacity to interact, producing enhanced effects as compared to their individual effect in a determined product. An example is the synergism between MSG and 5'-nucleotides. This property, synergism, was identified by *Kuninaka*¹ in the

1960s. That study showed that both nucleotides, 5'-GMP and 5'-IMP, may significantly reduce the use of MSG and still maintain the desired taste-enhancing effect in the final product.

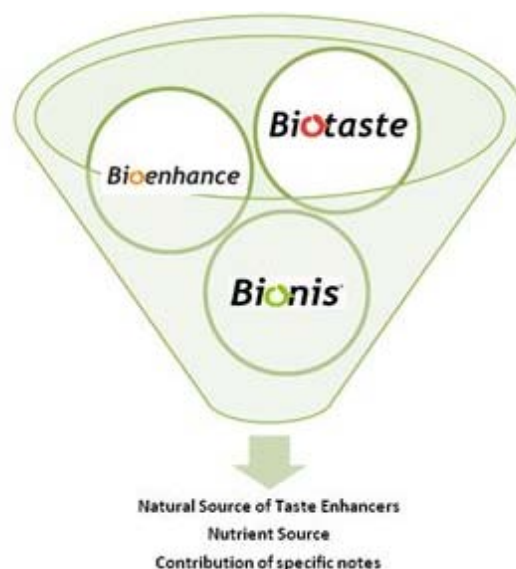
In his book, *Savory Flavor*, *Tilak W. Nagodawithana*² observed that several combinations of MSG with 5'-GMP and/or 5'-IMP are commercially available for the food industry. Most combinations present a MSG :5'-nucleotides ratio of 95:5. Due to the efficacy of their synergism, these taste enhancers are used in relatively low doses in processed food formulations, thereby generating cost advantages.

This is also observed with the use of **Yeast Extracts**, which naturally contain these substances (5'-GMP, 5'-IMP, and Glutamic Acid). Yeasts are known for their high RNA content³, and, as nucleotides are the building blocks of RNA, the production of yeast extracts naturally supply these taste enhancers. During the extract manufacturing process, the RNA chain is hydrolyzed, yielding 4 types of 5'-nucleotides: 5'-guanosine monophosphate (5'-GMP), 5'-uridine monophosphate (5'-UMP), 5'-cystidine monophosphate (5'-CMP), and 5'-adenine monophosphate (5'-AMP).

A controlled process may produce different ratios of nucleic acids, generating yeast extracts with different taste-enhancing profiles, from savory to more neutral flavor characteristics, and with higher or lower contribution to umami taste.

Other natural fermentative processes, using bacterial cultures, are also able to produce those nucleotides with the purpose of taste enhancement.

Having the strategy of developing and selling natural ingredients, **Biorigin** today has three product lines that can be used together or not to improve the organoleptic properties of several foods, enhancing their taste.



*Click in the figure above to know more about the products lines

Bioenhance & **Bionis** lines used together in vegetable products enhance the sweet notes of vegetables, as well as the body and the umami taste of the final products.

Suggestion – Vegetable broth with 0.01%* Bioenhance SFE101 + 0.14%* Bionis YE GMX18

Bioenhance & **Biotaste** used together in poultry products enhance poultry-meat notes, providing perfect taste balance in the final product

Suggestion – Chicken broth with 0.75%* Bioenhance SFE101 + 0.5%* Biotaste CH



Bioenhance & **Biotaste** used together in beef products enhance beef notes, increasing juiciness, and, in determined applications, provides roasted notes.

Suggestion – Beef broth with 0.75%* Bioenhance SFE101 + 0.5%* Biotaste BE



Bioenhance & **Bionis** used together in dairy products or sauces enhance milk and butter notes to round off the final product with an interesting body and umami effect.

Suggestion –Ranch salad dressing with 0.05%* Bioenhance SFE101 + 0.1%* Bionis YE GMX18

* dose in the ready-to-eat product

References

- ¹ Kuninaka, A. 1967. Flavor Potentiators. The Chemistry and Physiology of Flavors. Schultz, H.W., Day, E.A and Libbey, L.M.(Eds).AVI Publishing Co. Westport, Conn.p 515.
- ² Nagodawithana, Tilak W. 1995. Savory Flavors. Esteekay Associates, Inc Wisconsin, USA
- ³ CRC Critical Reviews in Food Science and Nutrition. Vol.18, Issue3

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