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Iowa Monosodium Glutamate Plant Expansion Complete

Ajinomoto's Eddyville, Iowa monosodium glutamate production facility expansion was completed in October 2007. "This plant expansion demonstrates the commitment Ajinomoto has to serving our North American customers," says Brendan Naulty, president of Ajinomoto Food Ingredients, LLC.

The larger, updated plant features state-of-the-art technology, resulting in a 50% increase in production capacity. "For our customers, this means the lead-time for product will be greatly reduced," says David Barbour, Ajinomoto's director of savory ingredients. "Our customers will benefit from our increased responsiveness and flexibility in meeting their needs for monosodium glutamate manufactured right here in the USA," adds Barbour.



Formulating For Successful Sodium Reduction

By Joseph Formanek, Ph.D., Associate Dir., Business Development and Application Innovation

Essential for life, adequate sodium is necessary for critical bodily processes including nerve transmission, muscular contraction and relaxation, and the maintenance of fluid balance. Sodium is so important physiologically that the taste of salt (roughly 40% sodium by weight), became something craved by humans and animals alike.

Salt is the world's oldest seasoning, having been used since before recorded history. Entire books have been written about salt and its importance in history—not just as a culinary ingredient, but also as a precious substance used for trade and an item that spurred world exploration and travel. Aside from its role as one of the recognized basic tastes—along with sweet, sour, bitter and umami—salt has long been valued for its important roles in both the preservation and processing of foods.

Recent history has found salt under attack by the medical and nutritional communities. Increasing

amounts of evidence suggest that excessive consumption of salt—specifically the sodium component of salt—is to blame for a host of maladies, the most significant of which is hypertension. Reduction of dietary sodium by 25–35% has been demonstrated to decrease cardiovascular disease events. Guidelines being suggested by the American Heart Association (AHA) promote a reduction in sodium consumption down to 1,500 mg per day. This is a dramatic and very significant decrease from the average current intake by Americans, which is in the range of 3,500–4,000mg per day.

Most consumers are surprised to know that their tabletop salt shaker actually contributes surprisingly little sodium to the average sodium intake—only about 6%. Processed foods deliver a whopping 77% of the diet's sodium, and therefore the responsibility for helping to decrease dietary sodium is falling on food manufacturers. There is

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even discussion about initiating restrictions on the levels of salt that may be used in prepared foods, and removing salt from the GRAS list.

Product formulation hurdles

The most basic problem with simply reducing sodium in food formulations is that the more you remove, the less flavor remains, rendering the final product bland and relatively tasteless. Other issues revolve around processing itself, where sodium functions to help extract meat proteins to develop proper texture in a processed meat product. Stability issues can also arise due to the reduction of the preservative effect of salt in a product. Increased spoilage levels occur if no additional preservatives are added to compensate for the sodium reduction.

The traditional salt replacer is potassium chloride, which is chemically similar to salt, but with the sodium ion replaced with that of potassium. Though the similarity to salt is present in the final product, potassium chloride is bitter, and contributes a different taste than salt. Using this replacer at even moderate levels can cause off-flavors to be present in products. Masking agents are frequently used in conjunction with potassium chloride to reduce bitterness, but the overall salt character in a product using potassium chloride is muted. What's more, the increased potassium level can be an issue for people with kidney disease.

Ajinomoto products offer many sodium-reduction solutions

Fortunately, Ajinomoto Food Ingredients (AFI) has many solutions to sodium-reduction dilemmas. Many Ajinomoto products are effective in helping reduce overall sodium in product formulations, while delivering the flavor that is lacking under normal sodium-reduction circumstances.

- **Monosodium glutamate (MSG)**
The sodium salt of L-glutamic acid, it's the classic flavor enhancer, identified by Dr. Kikunae Ikeda in 1908, and marketed by Ajinomoto since 1909. MSG gives the perception of salty taste, as well as adds umami taste to foods, while only contributing a minimum of sodium to formulations (it's only 12.3% sodium by weight).
- **Monoammonium glutamate (MAG) and Monopotassium glutamate (MPG)**
The ammonium and potassium salts of L-glutamic acid, respectively, MAG and MPG deliver umami flavor like

MSG (which is conveyed by glutamic acid), but with no sodium contribution. At higher levels, a slight flavor can be detected from MAG and MPG, but it's not nearly as strong as that contributed by potassium chloride.

- **5' Nucleotides (I+G)**
These products are derivatives of nucleic acid (Inositol and Guanylate). By themselves, these nucleotides have no taste, but they work in synergy with glutamates to deliver flavor enhancement and a similar sodium taste-enhancing effect as the glutamate products.
 - **Koji-Aji**
This new product that contains partially hydrolyzed wheat protein, along with nucleotides from a yeast extract. Peptides that are formed through the product's partial fermentation mimic those formed during the natural aging process of foods. That is, Koji-Aji delivers a richness and fullness of body that works to add complexity to products, much like aging does in beef and cheese. Koji-Aji also works nicely in reduced-fat and reduced-sodium products to build back the flavor and character notes that are missing in these products.
 - **Yeast extract**
This product contains MSG, I+G and other peptides that can be used to enhance flavor as well as give the perception of higher sodium levels in a product. Yeast extract typically contribute a good dose of their own flavor, which can be detected when used at even moderate levels in delicately-flavored products.
 - **Specific sodium-reduced flavor preparations**
We have developed several reduced-sodium products that utilize different ratios of the above-mentioned ingredients, in order to gain the benefits that each of them might offer in a variety of applications. We'd be happy to discuss these options in depth so that your specific formulation needs can be met satisfactorily.
- AFI is prepared to help our customers with their reduced-sodium formulating needs. For additional information on any of these products, of samples, please contact our corporate office (773-714-1436), our website (www.ajiusafood.com) or Joseph Formanek at formanekj@ajiusa.com.

Activa® TG Update

Ajinomoto continues to develop innovative ways that our customers can benefit from our transglutaminase products. Whether it's creating exciting new bonded food products, cutting raw product costs or reducing sodium—there's an Activa® product that can help make it happen. Here's the latest news:

Decreasing product costs

Using Activa products to modify proteins can cut raw materials costs, increase yield and enhance product attributes, all of which can result in cost savings, depending on the application. For example, in cheese products, Activa enhances water retention and gelling, allowing products to be made with less protein (or more water). Similarly, adding Activa to yogurt allows for the reduction of added dry milk protein. Of course, Activa TG is highly effective at helping cut costs with meat and fish protein products. Helping with the creation of novel products from under-utilized cuts and improving slicing yields are just two of the ways that Activa can cut costs on meat applications.

New Activa GS

Primarily for bonding larger food pieces, Activa GS can be used in either powder or liquid/slurry form. For example, once in slurry form, Activa GS can be sprayed, mixed pumped or brushed on—and the slurry will stay liquid for 6+ hours—allowing for easier handling. Activa GS can also be added right to the mixer or tumbler before the product is stuffed or molded, a technique useful for restructured protein

products. Freezing or cooking does not destroy the enzymatic bonding system of Activa GS, and unlike conventional bonding agents, such as egg whites and starch, Activa GS can easily bond large red meat cuts and salmon fillet.

• Potential applications of Activa TG-GS include:

- Joining tenderloins in head to tail fashion
- Joining flat iron steaks into a block for slicing
- Binding of lean to lean and lean to bone
- Preventing fillet gap in fish
- Easier production of thin sheets of restructured meat or fish by allowing the manufacture of blocks of protein in specific dimensions

• Sodium reduction

Decreasing sodium in various food applications is an area of renewed interest among food processors. In the case of emulsion-type products, such as processed meats, a decrease in sodium usually translates to less gelling and textural losses. Using Activa TG improves gelling in these types of sodium-reduced products, leading to better texture and overall quality.

To find out more about the Activa-TG product series or for samples, please contact Ajinomoto Food Ingredients LLC at 800/456-4666. And don't forget to visit our Activa website at www.activatg.com for information on the latest governmental approvals (both here in the U.S. and abroad), and to view our TG newsletter.

AFI Announces New Associate Director of Business Development and Application Innovation

Brendan Naulty, president of Ajinomoto Food Ingredients (AFI) announced the appointment of Mr. Joseph A. Formanek, Ph.D. in the position of Associate Director, Business Development and Application Innovation. "Joe Formanek will be responsible for technical support for the current Ajinomoto product portfolio, as well as for the products and technologies in our growing area of health and wellness," says Naulty.

Formanek received his B.S. in Microbiology from the University of Minnesota and his Ph.D. in food science from

the University of IL (Urbana/Champaign). His most recent previous position was with Griffith Laboratories in Research/New Technology Development.

Dr. Formanek is married with two children and lives in suburban Chicago, where he spends his free time collecting antique cars, radios and phonographs, and home-brewing beer (that food science degree is handy on the off-hours, too).

Please join us in welcoming Joe Formanek to the Ajinomoto team.



Umami Article in Wall Street Journal Wins Beard Award

Deemed “the Oscars of the food world,” by *Time* magazine, The James Beard Foundation Awards are the country’s most coveted honor for chefs; food and beverage professionals; broadcast media, journalists, and authors working in the food arena. On June 8th, the awards were presented in New York city.

Umami is a hot media topic—as you’ve no doubt noticed in recent years—and an article on umami, published last December in the Wall Street Journal, took top

honors in the category of Newspaper Feature Writing with Recipes. “A New Taste Sensation,” by Katy McLaughlin, covered the history of umami and production of monosodium glutamate, as well as the science behind the fifth taste. In addition to including a quote from an Ajinomoto Food Ingredients spokesperson, various food manufacturers’ efforts to utilize umami ingredients are highlighted. The article is available for viewing online at WSJ’s site (<http://online.wsj.com>).

Umami Session at IFT

Plan to attend the umami session at the IFT meeting on Monday, June 30. The 90 minute session, entitled “Umami: A Taste Known Throughout Antiquity and A Century of Flavor Discovery” will take place in room 393. The panel discussion features the following speakers:

- **Paul Rozin**
“Food Culture and History of Umami”
Dept. of Psychology, University of Pennsylvania
- **Nirupa Chauhari, PhD**
“Discovery of the Umami Receptor”
Miller School of Medicine,
University of Miami
- **David and Anna Kasabian**
“Cooking With Umami”
Authors of *The Fifth Taste*



Visit Ajinomoto at the Expo

June 28-July 1, 2008 ■ Booth #883 ■ New Orleans

Plan to stop by and visit us. Sample the wide array of food ingredients from Ajinomoto in exciting new applications. *Hope to see you there!*

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