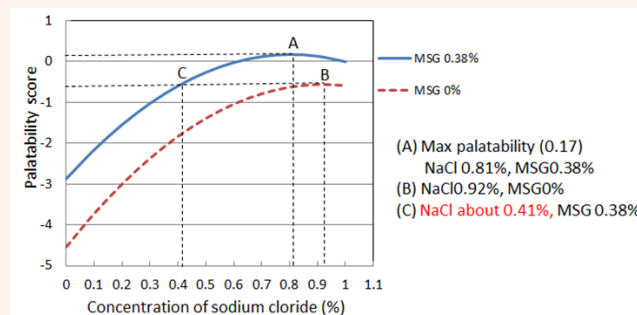


Discover Sodium Reduction Facts of MSG

Q. How does MSG help reduce sodium intake?

- MSG has 12.3% sodium, as compared to 39.39% in table salt. This means MSG contains nearly 70% less sodium than table salt while having taste-enhancing properties.
- To this end, studies have demonstrated that by increasing the level of glutamate and decreasing the level of salt, one can reduce the sodium content in food by up to 40% without losing palatability.
 - For instance, a study conducted in Japan and published in Journal of Food Sciences concluded that, when the use of NaCl alone was reduced from its optimal level of about 0.92%, the palatability score of the soup decreased dramatically.
 - However, by combining 0.38% MSG with 0.41% NaCl, the palatability rating of the soup recovered to the same level of pleasantness as was achieved by 0.92% NaCl alone.
 - The sodium content of the soup with 0.92% NaCl was 0.36%, compared with 0.21% in the soup with 0.38% MSG and 0.41% NaCl, representing a 40% overall sodium reduction.



- Further, a study conducted by scientists from Department of Food Science and Technology, University of California and published in the Journal of Food Science suggested that monosodium glutamate (MSG) can be used to significantly reduce sodium while also promoting the enjoyment of better-for-you foods like grains and vegetables.

Q. Are there any global examples to support the premise that MSG can help cut down dietary sodium intake?

Yes, numerous global examples support the use of MSG as an effective tool for reducing dietary sodium intake while preserving the taste and palatability of food. Over the years, MSG has gained recognition not only for enhancing flavors but also for its ability to replace a portion of the sodium chloride (salt) typically used in food preparation, leading to a healthier overall diet.

- In Singapore, the Singapore Nutrition and Dietetics Association, Singapore Heart Foundation, and National Kidney Foundation have recommended the use of MSG alongside some reduced table salt to lower dietary sodium intake.
- In the United States, the National Academies, in its Dietary Reference Intake, has recommended MSG as a tool to reduce sodium intake. As per the 2010 guidelines, it is possible to maintain food palatability with a lowered overall sodium level in food when MSG is substituted for some of the salt.
- Furthermore, the U.S. Food and Drug Administration (FDA), in its 2024 Draft Guidance for Industry: Voluntary Sodium Reduction Goals (Edition 2), continues to support MSG as a sodium reduction strategy. This guidance, referencing the 2023 proposed rule on 'Use of Salt Substitutes to Reduce the Sodium Content in Standardized Foods', includes MSG as one of the ingredients, alongside herbs, spices, yeast extracts, amino acids, and dairy extracts, that can help reduce sodium content in foods.

Q. Can MSG be used to reduce the sodium content in Indian Food?

- Indian cuisine is renowned for its rich and complex flavors, which come from an array of spices, herbs, and diverse cooking techniques. While MSG is not traditionally used in Indian cooking, recent studies have shown that it can complement the existing spice combinations in many Indian dishes, enhancing their flavor profile.
- MSG can be used to reduce the sodium content in food while adding an extra dimension of taste, especially in savory dishes. For example, [a 2017 study investigating the role of MSG](#) in traditional poories (deep-fried unleavened wheat-based bread) demonstrated its ability to enhance flavor even with reduced salt.
 - The control product, made with 2% salt, was compared with experimental products containing varying levels of MSG (75 mg/100 g and 100 mg/100 g) and reduced salt content (1.5%, 1.75%, and 2%).
 - When combined with spices such as chili, cumin, pepper, and omum, the products containing MSG received higher scores for umami flavor and overall taste, especially in salt-reduced versions.
 - The results indicated that MSG's flavor-enhancing properties allowed the products with less salt to be more acceptable in terms of taste. Products with a spice combination, reduced salt (1.75%), and MSG were highly rated for their flavor and sensory characteristics.
 - This study highlighted how the synergy of MSG and spices can be a powerful tool for reducing salt content while preserving and enhancing the flavor of Indian food.
- Further, another [study suggests that MSG is the most suitable salt replacer](#) with a great potential to maintain the pleasantness, saltiness, familiarity and taste intensity of various products.



Q. What role does MSG play in managing hypertension? Are there clinical studies that suggest MSG can help control hypertension?

- Currently, there are no clinical studies directly linking MSG to the reduction of hypertension. However, MSG may support hypertension management indirectly by enabling a reduction in sodium intake. MSG enhances the taste of food, allowing people to enjoy flavourful meals with less added salt, which may be beneficial for those with high blood pressure. Lower sodium intake is generally recommended for hypertensive patients, so the ability of MSG to contribute to lower sodium levels in the diet may be helpful.
- Further, to this end, a study was conducted in Japan to examine the effects of Monomagnesium di-glutamate (MDG), a glutamate compound similar to MSG, as part of a low-sodium diet.
 - The study involved psychiatric patients who were alternately provided with standard meals (3.28 g sodium/day) and low-sodium meals with MDG (2.43 g sodium/day) over two weeks.
 - The study found that food intake remained consistent between both meal types, indicating that palatability was not affected by the lower sodium content. The low-sodium meals with MDG led to an average reduction in daily sodium intake by 0.85 g, demonstrating MDG's potential in making low-sodium meals more acceptable without sacrificing flavor quality.

Q. How do potassium and MSG compare in their impact on reducing the use of sodium chloride (salt) in food, given that potassium is often used in low-sodium salt alternatives and has no side effects?

- Potassium is commonly used in low-sodium salt substitutes to help reduce sodium content, though it lacks taste-enhancing qualities and can have a slightly bitter taste, which some people find unappealing. Additionally, potassium is not suitable for individuals with certain health conditions, particularly those with renal impairment, as they may need to avoid excessive potassium intake.
- MSG, on the other hand, offers unique advantages for sodium reduction. It enhances the umami flavor, which can amplify the perception of saltiness, making it easier to reduce the actual salt content without compromising taste quality. This dual function—enhancing both salty perception and overall taste—positions MSG as a potentially more effective ingredient for reducing sodium in foods.
- Moreover, MSG can also help reduce the bitter sensory effects of potassium chloride (KCl), making it beneficial when used in combination with potassium in food formulations. For instance, a study conducted in Brazil and published in Journal of Dairy Science on low-sodium Mozzarella cheese formulations found that combining MSG with KCl allowed for a sodium reduction of up to 54% while still maintaining acceptable sensory properties.



Q. When potassium chloride (KCl) is used in food, it can introduce a bitter taste. While MSG could be an alternative to KCl for improving flavor, might using MSG lead people to consume more food since it enhances taste, potentially leading to overeating?

- There is no clinical evidence supporting the idea that MSG causes addiction or stimulates overeating. While some claim that MSG might increase appetite and lead to overeating, which could contribute to weight gain, scientific studies do not back this assertion. In fact, the opposite may be true.
- A review of studies on MSG and food intake shows that MSG does not significantly impact food or energy consumption; of at least 14 studies, only two found MSG to increase food or energy intake, while the majority indicated either no effect or even a decrease in intake. This suggests that MSG might even have a mild satiating effect, reducing the likelihood of overconsumption despite enhancing food flavor.

