

# Msg and its neurological effects biology essay



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Due to evolving since in fields such as food science pharmacology, pediatrics, medical psychology, and toxicology, various food additives have come under a sharp review. In the medical field, a controversy has been ranging as to whether MSG should be used at all since diverse research case studies have not only shown its negative effects on health in general but also its neurological effects. Monosodium Glutamate (MSG) has been used as a flavorant in the food industry for close to one hundred years in foods consumed by the masses daily. Although the Food and Drug Administration (FDA) classifies MSG as a food ingredient that is considered generally safe for use by the public, a number of researches such as by Schwartz have shown that it is harmful to the user's health and should therefore be banned. Glutamate is naturally found in foods such as milk, poultry, meat and vegetables. Further, the body naturally produces glutamate which is essential for the nervous system. However, synthetic manufacture has been proven to be harmful. This study purposefully outlines such effects on the nervous system and serves to support other recent findings against the use of MSG.

## Introduction

MSG is a food additive that is found in most of the commercial foods. It improves the flavor of the food hence attracting customers. In itself, there is no value addition in terms of nutrition. It actually does nothing to food, but to the eater it is detrimental to their health. MSG is referred to as an “excitotoxin” or neurotoxin. This is the case since it widely involves the neuroscientists' field in that it has degenerative and deadly effects on the brain and the nervous system. MSG actually over stimulates the brain

neurons to exhaustion leading to their death. MSG goes to the brain through the membranes in the mouth and the throat. It also enters the blood stream through the digestion of food in the digestive system. MSG will trick the brain to thinking that it is getting value from the foods that are being taken in. MSG is not natural in nature. It is manmade from glutamic acid which is an amino acid which is found in complete proteins. Amino acids do occur naturally from many plants and animal tissues. The artificially created types of Amino acids are processed through the breakdown and the change of the natural form of glutamate. Some of the natural substances used for this purpose are molasses, grain starches and corn. The manipulation process produces various form of glutamate. The d-glutamate is never found naturally. The free glutamates could enter the body 8 to 10 times faster than the bound or the natural glutamates. Natural glutamate is found in foods like tomatoes, milk and the mushrooms. The commercial methods or techniques used to manufacture glutamate were not in use until the 1960's. The MSG in use today is not at all natural

#### Literature review

The current research shows that MSG is the cause of neurodegenerative diseases like Alzheimer's Huntington's, Parkinson's and Amyotrophic lateral sclerosis. Neuroscientists, such as Adriene, have explained that MSG attacks the blood-brain barrier of the brain cells which is responsible for protection and regulation of the delicate chemical exchange within the brain cells. The chemical exchange process is normally well balanced and its functionality is unquestionable. Under normal conditions also the brain and the body immune system handles all kinds of pollutants, diseases and stress. A very <https://assignbuster.com/msg-and-its-neurological-effects-biology-essay/>

small amount of toxic substance can actually cause the brain call to over react leading to excessive exhaustion and death (Samuels).

MSG is one of the major “ excitotoxins” and is widely known to cause damage to the brain part that governs or controls other systems in the human body. The damage will probably appear as a disorder in the nervous system and the endocrine system. This can be manifested in the cases of unusual sleeping patterns, persistent hunger and food cravings. This usually leads to obesity. MSG is also known to cause migraine headaches, behavioral disorders, asthma attacks, depression, heart irregularities, arthritis, sinus problems and digestive problems (Anglesey).

MSG is a neurotoxin that takes a very short time to create a widely diverse and dramatic effect on the human body. An individual may take a mild dosage of a prescription drug and have mild effects which may even be favorable. However, another person may take the same prescription drug and instead, get depressed, have stomach disorders, a swollen tongue and aching joints. The different parts of the brain do govern various body functions. The part which is attacked will directly depend on the brain part that has been attacked by the excitotoxin. If for example a person has had a head injury, a genetic pinch in a given part of the brain, has had a fever that is attacking parts of the brain, or even has had a stroke, then it is certain that the part of the brain that has been affected will be due to the toxins.

Some of the foods that are sold are sold as weight loss promotions to the people. When food substances such as fat and sugar are removed from the foods, MSG together with aspartame is usually added. These excitotoxins are

known to cause obesity and irregular heartbeats in many people. FDA usually allows the labeling of MSG'S as natural flavors, hydrolyzed proteins and autolyzed yeast when used as just a component ingredient in an additive and not purely MSG. Americans today are consuming 160 million pounds of MSG per annum. A toxicologist and an author by the name Dr, George Schwartz claims that two table spoons of MSG on a piece of bread could kill a medium sized dog within a minute. The FDA in the year 1995 claimed that no one can react to less than 3 grams of MSG per meal. However, despite their confirmation, they have warned that MSG should be avoided by children, pregnant or lactating women, the elderly and those who suffer Asthma. A highly sensitive individual can react even to less than a gram of MSG (Blaylock).

#### Effects and Related disorders

Research has shown that in the late 1950's, an estimated amount of 12 grams per person per year of MSG was used by the Americans. Looking at the same issue today, the estimate has shot to between 400 and 500 grams per person per year. This is an amount that needs evaluation by FDA.

(Anglesey) The wide usage of MSG came in the mid 1970s. It gained much popularity with producers of food through the 1980s. Two powerful excitotoxic food additives that took the food industry by storm were the MSG and aspartame. MSG has been widely associated with a wide range of diseases, symptoms and complaints. As earlier stated, it affects the neurological system of the body. The same ailments are today being reported to be on their rise. Often the ailments are quite unexpected and hard to explain either.

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Neurological effects of MSG and statistics of interest published by national organizations have been listed here-in. Fibromyalgia: this is a growing epidemic. Its patients eliminated MSG and aspartame during the study conducted by Florida University which reported complete relief of symptoms in 2001. However, the most cognitive study was carried by Smith, Shmidt and Guns who sought to prove the link between Fibromyalgia and MSG with several other additives as a common rheumatologic disorder. In this case, 4 patients were diagnosed for 2-17 years with fibromyalgia syndrome.

However, they had undergone various modalities of treatment while failing to consider MSG as the causative agent. After eliminating aspartame and MSG from their diets, complete or near complete resolution of symptoms diagnosed were recorded within months. In this case analysis, the subjects were women who had multiple comorbidities and recurring symptoms after the ingestion of MSG. It is therefore indicative that the excitotoxins, present in substances such as Aspartate and MSG, become excitatory neurotransmitters once ingested, and if consumed in excess can lead to neurotoxicity. These 4 patients may therefore represent this fibromyalgia syndrome and act as a link to conclusively establish a link to MSG. Therefore, persistent studies, if carried out on a larger sample, might serve to link the fibromyalgia syndrome to MSG and aspartame more concretely (Murray).

Further, a study posted in MSGTruth. org is instrumental in linking MSG to pituitary adenomas. MSG overstimulates the hypothalamus which consequently leads damage on the neurons. The hypothalamus is responsible for directing the pituitary gland's actions, which is also referred to as the master gland since it in turn directs all other glands in the body and

their actions such as metabolism, development of sex and reproductive organs and other key development functions. Statistics have shown that 25% of Kenyans develop a pituitary adenoma in the course of their lives.

However, studies linking pituitary adenomas to MSG are inconclusive. Some studies had previously depicted this as a genetic disorder but have however been proven wrong.

About half of the pituitary adenomas secrete prolactin. Prolactinomas can become extremely large over time to crowd the optic nerve thereby affecting vision. It is however detected early in women since it interferes with menses and stops ovulation. This prevents conception or pregnancy in general.

Further, since prolactin is responsible for lactation, secretion can cause lactation in the victim even if they were never pregnant or even if they are male. Hence, men with these adenomas develop breasts which have the capacity to secrete milk. Unlike in women who are forewarned by the effects on vision or associated headaches, this condition is deadly in men since the tumor can only be detected when it is large and dangerous. Further, research records by most governments are only kept for cancerous tumors while benign tumor, such as in this case, are neglected hence making it the more difficult not only to research on especially as to its link to aspartame and MSG but also to treat. Treatment is very expensive. There are only two treatments with Dostinex, a cabergoline, is normally preferred which costs approximately \$ 30 a tablet. Therefore, there is a need to sponsor more research as to the link to MSG and brain tumors (Monosodium Glutamate (MSG) and Aspartame).

Other effects that have been attributed to MSG and its neurological disorders are headaches and migraines, asthma, obesity among others. In headaches and migraines: an approximate amount of \$ 2. 2 billion per year are being spent on drugs which treat headaches. This chronic condition has received a 74% increase from the years 1980 to 1990. Secondly, Asthma has been linked to MSG and related to the brain effects. According to statistics there was a decline of asthma until the mid-eighties. Since then however, there has been a recorded 100% increase in the rate of death among the children and the seniors. This incidence has increased 600% in the last 10 years. FDA has identified that the uncontrollable asthma can be caused by MSG, unfortunately no further measures are taken to deal with the situation.

Defects of birth and disorders of production: MSG has been identified as a mutagen i. e. mutates fetuses. It is said to cause damage to the intellectual development, reproduction, growth patterns and the gonadal functions.

However, such research has not been concrete. Other effects are neurological or emotional disorders. Laboratory studies have shown devastating effects on brain development. This includes autism, attention deficit, dyslexia, hyperactivity, violent episodes or rage, panic attacks, depression, paranoia, seizures and cerebral palsy. Rats were used for this study. However, human beings are 5 times more sensitive to MSG than rats.

Obesity too has been linked to MSG and the nervous system. This is the most consistent effect of excitotoxins exposure and can be termed as a growing problem that does not respect age or sexual boundaries. In fact scientist's uses glutamate to feed animals used in the laboratories with an aim of inducing obesity. MSG will trigger insulin or adrenalin or fat storage or even a



food craving response. This actually depletes the serotonin levels which in turn trigger headaches, depression and fatigue and also leads to food cravings.

Finally, it is vital to note the following maladies and diseases are also attributed to MSG. Heart maladies: for the Americans, more than 70 million of them do suffer one or more forms of cardiovascular disease. 43% of all deaths in America are related to this same problem. Cardiovascular operations in the US went up with 287% from the year 1980 to 1990. Alzheimer's disease: in the 1980s, this disease was nowhere among the highly identifiable health threats. It is however ranked third in today's statistics after cancer and heart disease. There are 4 million people afflicted by the disease at a cost of \$47, 000 per person per year in healthcare costs. Parkinson's, ALS, MS and the Huntington's diseases like Alzheimer's are all progressively growing neurogenic diseases that show brain and nerve cell damage. There are also other symptoms of MSG sensitivity that include swollen throat and tongue, joint pain, skin disorders, sleeping disorders, burning, tightness of the face or its redness, vertigo and gastrointestinal complaints.

This subject of disorders in behavior for children is becoming a common discussion among professionals. The Studies that are already done have widely associated the violent behavior, attention deficits and emotional instability to chemical imbalances occurring in the brain. The reason that young brains are developing the blood-brain barrier, it is now becoming an extreme possibility that there will be early damage caused by excitotoxins.

In April 1994, a time magazine article confirmed the rising problem of behavioral disorders. The magazine stated that the attention deficit hyperactivity disorder was not in existence 15 years ago. It is however said that it is now affecting 3.3 million American children. This magazine article quotes a prominent research which 10 years ago stated that symptoms of ADHD and ADD (attention deficit hyperactivity disorder) vanished with maturity. Today however, ADD is now the fastest growing diagnostic category for the adults. The combination of excitotoxins i. e. MSG and aspartame came into wide usage in the 1980s.

The drug sale rate for these disorders has shot up by almost 400% in a period of 4 years only. MSG is now a known mutagen. Its damage occurs in the womb as chemicals pass from the womb of the mother into the blood system of the fetus. The old people do show high vulnerability rates to the progressive neuro-generative diseases. An example of such diseases is Alzheimer's.