

Nicotine - The Active Ingredient in the Nightshade Vegetables

Nicotine acts as an acetylcholinesterase inhibitor.

What are acetylcholinesterase inhibitors?

- The chemical that transmits nerve impulses from one nerve ending to the next is acetylcholine - once it has transmitted a nerve impulse it has done its job and is no longer needed so it is broken down by an enzyme called acetylcholinesterase and recycled.
- Nicotine/Solanine (or tomatine from tomatoes) slows the production of this acetylcholinesterase, so acetylcholine isn't broken down as fast as it's being produced.
- Acetylcholine builds up causing a 'traffic jam' of stimulation at the receptor nerve endings. Or think of an orchestra where notes are played and then don't stop playing.
- The nerve endings become overstimulated. At low levels this is mildly pleasurable and blurs sensitivity, but too much can be harmful.
- This overstimulation can lead to muscle weakness, muscle twitching, hypertension, increased intestinal contractions and increased secretions of tear, sweat, saliva, gastric and intestinal glands.
- All nightshade foods contain solanine, a strong acetylcholinesterase inhibitor. This is what makes excessive consumption of nightshade foods unsuitable for many people.
- Certain pesticides, particularly organophosphate and carbamates, also work as acetylcholinesterase inhibitors, achieving the same effect as solanine or nicotine. That's why they replaced nicotine as the insecticide of choice after World War 2, when organophosphates were used as nerve gas.

For a diet that seeks to maintain a strong and healthy nervous and neuromuscular system there is considerable evidence that the safest approach is to avoid nightshade vegetables and to eat food that is grown without the use of carbamate or organophosphate pesticides, i.e. organic food.

Before the discovery of chemical pesticides, nicotine was a widely used insecticide. It kills insects in the same way, but chemical sprays are cheaper and longer-lasting. Until they were replaced by hormones and antibiotics, organophosphate pesticides were also used by livestock farmers as growth-promoters - the mechanism whereby they cause muscle weakness and increase secretions of digestive fluids also causes animals to exercise less and eat more, thereby fattening them up more quickly.

Why do people love nightshades?

What is it that makes tobacco so addictive? Why is it that sometimes only chips will do, or we are gagging for a pizza? Nicotine, in small quantities, by inhibiting the breakdown of acetylcholine, stimulates increased activity of the acetylcholine receptors in the brain and this leads to increased flow of adrenaline. This increases the heart rate, blood pressure and leads to increased blood glucose levels. This mild increase in energy level is achieved, along with a reduced nervous sensitivity; producing a combination of calmness and stimulation. This provides short term relief in the face of the stresses and pressures of modern life. In the longer term it puts a strain on the nervous system as the receptors are being overstimulated.

Why don't we eat tobacco?

The leaves of all nightshades contain high levels of nicotine. One could, at a pinch, smoke potato or tomato leaves. A potent insecticide can be made with tomato leaves. The levels of nicotine in the leaves of nightshade plants are much higher than in nightshade fruits or tubers. 8-10 cigarettes, if eaten, would be enough to kill a person. First time smokers experience dreadful nausea but gradually develop a resistance to the effects of nicotine and this is how addiction develops - more and more is needed to satisfy the craving.

Why are nightshades legal?

If the nightshade foods were to be introduced to the Western diet today, under current Novel Foods regulations they would have to be tested for safety. It is unlikely that they would be permitted to enter the food supply, solely because of their nicotine (solanine) content. However, like cigarettes, they slipped into our diet despite some voices in opposition and have assumed a major role in our nutrition and health, a role that, in a free society, should be accepted.

However, moderation in all things is a worthy principle and it could be argued that, in our diet we have perhaps gone too far down the road of nightshade acceptance.

So how can i enjoy a nice bit of ketchup?!

There's a fantastic tasting range of nightshade-free organic foods called Nomato. They're from the same guys that brought us Green & Black's chocolate, so you can imagine they taste amazing. There's Nomato pasta sauce, Nomato ketchup, Nomato soup, and Nomato veggie chili beans. So you can have a bit of what you fancy without the nicotine alkaloids found in tomatoes and other nightshades.

What are the Nightshade foods? How do they differ from each other? What are their origins?

Tobacco

The most powerful source of the nicotine alkaloid found in all nightshades became a popular drug in the early part of the 1900s, when mass produced cigarettes made them available to the expanding urban societies. Although the nicotine content of tobacco is much higher than that found in nightshade vegetables which are eaten, the practise of smoking reduces the amount of nicotine absorbed. The nicotine in a single cigarette, if taken direct into the bloodstream, would be fatal. Eating a single cigarette could cause severe illness. There are several instances of livestock poisoning where cattle or sheep have eaten nightshade plant leaves.

Tomatoes

Tomatoes were first brought to Europe from Mexico by Cortez and were first cultivated for food in Naples. The English regarded them as poisonous until the 1700s. They were introduced in America as an ornamental garden plant in 1808, but were not eaten as they were believed to cause stomach cancer and appendicitis. The botanical name for tomatoes 'Lycopersicon' means 'wolf peach' and refers to the association between werewolves, witchcraft and nightshades. Then, in 1820, Colonel Robert Johnson defied the advice of his physicians ("You will foam and froth at the mouth and double over") and ate tomatoes on the steps of Salem Courthouse, New Jersey, in front of a crowd of 2000 witnesses, the local sheriff waiting to arrest him for suicide. He survived and people began slowly to accept tomatoes as food. In the US and Northern Europe they really took off as food with the introduction of canning and canned soups and then rose again with the expansion of consumption of pizza and pasta in the past 30 years.

Potatoes

Potatoes were elevated in status when the celebrated Parmentier produced a galaxy of delicious potato recipes in 1785 to help relieve famine in Paris. Potatoes were cheap food for the masses - a peasant or worker could be fed from a quarter as much land if they ate potatoes instead of grain. Nonetheless, the French Revolution took place 4 years later. The Paris Commune declared potatoes 'Revolutionary food' while English landlords made them compulsory on their Irish estates.

Traditionally potatoes were kept in paper sacks and sold unwashed. This practice protected them from direct sunlight. The modern practice of washing potatoes and packing them in plastic bags allows light to affect the potato and stimulate its production of solanine, the nightshade alkaloid

that, in nature, sickens animals that might dig up potatoes for food. In 1976 the Department of Health, concerned about high levels of anencephaly and spina bifida, urged pregnant mothers to wear rubber gloves when preparing potatoes and to discard in their entirety any potatoes that showed signs of greening or of blight (black streaks in the potato). It is not enough to simply remove the discoloured part - the entire potato should not be eaten. The solanine in potatoes is 4 times greater in the skin than in the rest of the potato. The fatal dose of solanine for an adult is 200-250 mg depending on body weight. Potatoes should not contain more than 20 mg of solanine per 100g, so it would take at least 1 Kg of potatoes (2.2 lbs) to be fatal. Potato peels have been found to contain up to 180 mg of solanine per 100g, so a person consuming 150-200g of deep fried potato peels with a high solanine content could be at considerable risk. Potatoes that have been properly stored and are from low solanine varieties will only contain 7 mg/100g. In 1996 the Committee on Toxicity stated that potatoes should not be eaten if they still taste bitter after the green parts and sprouts have been removed. However, few people taste-test a raw potato once it is peeled to assess its bitterness. Although spina bifida prevention now focuses on preconceptual consumption of folic acid, the world's highest incidence of spina bifida is in Ireland, where the wet climate encourages late potato blight. A study in Belfast showed that mothers who had given birth to a child with spina bifida or anencephaly could reduce the risk of a similar defect in the second child by 50% if they maintained a potato-free diet.

Peppers and capsicums

Peppers and capsicums were rare in the Western diet until the 1980s, when they became widely available as fresh vegetables and, in their hotter forms, in Asian cuisine and as hot sauce. Chillis replaced peppercorns in Indian cuisine from the 1650s onwards, after Portuguese traders brought plants and seeds from Brazil. Hot peppers are rich in capsaicin, which creates a burning sensation that affects pain receptor cells and causes them to release endorphins, the body's natural opiate-like painkillers, that create a temporary feeling of euphoria. Peppers and capsicums also contain solanine and solanadine, the nicotine compounds that are unique to nightshade plants.

Aubergines

Aubergines or eggplants most resemble in appearance the belladonna nightshade plant that may be their wild ancestor.

Source: <http://www.organicfoodee.com/inspiration/craig/nightshadefoods/>

