

**Review: Dr Russell L. Blaylock, *Excitotoxins: The Taste That Kills*,  
Health Press, Santa Fe, NM, 1997**

Pages: 298

**Master Class in Brain Function and Neurotoxicity**

Dr Blaylock mixes neurology with pharmacology in this surprising look at excitotoxins (ETs). The thesis is these damaging and ubiquitous food additives are literally destroying the minds of the most vulnerable through known brain mechanisms.

The crash course section covering Ca channel blockers, the brain's glutamate pump self defence system, and energy requirements helps one understand *why* they are so destructive.

The shady politics and regulatory-captured FDA are also discussed, which ties into the many label aliases food companies are able to use to hide ETs from ignorant consumers.

To conclude, many helpful vitamins are listed to counter ET damage, which may well be added to one's health protocol.

There is one unfortunate negative, a downplaying of environmental factors in Alzheimer's and Parkinson's especially in regards to aluminium exposure, which is at odds with the research of Dr Chris Exley.

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**Foreword (pp. xiii-xv)**

Monosodium glutamate (MSG), aspartic acid, and aspartame (NutraSweet) are all excitotoxins (ET).

DDT trucks sprayed beaches with children in the 1940s and 50s.

**Introduction (pp. xvi-xxii)**

Kombu seaweed contains MSG.

MSG destroyed the inner layer of mouse retinal nerve cells after one dose.

Hydrolyzed vegetable protein (HVP) contains three ETs.

MSG is glutamate with a Na atom added.

HVP is made by boiling waste vegetable matter in acid, then neutralising with caustic soda forming a brown sludge.

### **I) A Crash Course in How the Brain Works (pp. 1-20)**

Hyperactive children show 'turned down' frontal lobes.

Herpes encephalitis is caused when herpes simplex virus attacks the temporal lobes, leaving victims unable to make new memories.

Θαλαμος: "inner chamber".

Even minor pituitary gland injuries can be fatal.

The brain consumes 20% of O<sub>2</sub> and 25% of glucose yet is only 2% of body weight.

Axon impulses travel at 200mph.

Anti-depressants inactivate neurotransmitter enzymes, e.g. monoamine oxidase (MAO).

There are over fifty neurotransmitters.

The hypothalamus, pineal and locus ceruleus in the brain stem aren't protected by the blood-brain barrier (BBB).

Stroke breaks down the BBB.

### **II) Very Special Amino Acids (pp. 21-32)**

The Krebs' cycle (KC) breaks down glucose into e's; one glucose molecule generates 36 ATPs.

Collagen has 1,500 AAs in its structure, insulin only 86.

Anabolism is protein production.

Tryptophan is converted into serotonin.

Cysteine stabilises DNA against radiation, and cockroaches have a lot which is why they are immune to radiation.

Most non-essential AAs are formed through the KC.

Over 70 AAs are excitatory.

NMDA: N-methyl-D-aspartate.

NMDA glutamate receptors are the most common.

Aspartate opens the Ca channel, causing cell entry and damage. Glycine is also required for this.

Zn and Mg can close the Ca channel so are protective.

### **III) Exciting Cells to Death (pp. 33-57)**

In 1908, Dr Kikunae Ikeda at the University of Tokyo isolated the active chemical MSG in Kombu, *ajinomoto* ("essence of taste"). The Japanese added it to rations in WWII to make them tastier.

The FDA doesn't regulate HVP carcinogen content.

In 1974, Dr Olney fed MSG to pregnant Rhesus monkeys which gave their offspring brain damage.

A child's brain is 4X more sensitive than an adults to these chemicals.

Aspartame is a mixture of phenylalanine and aspartate, and methanol.

A pumping system removes excess brain glutamate into surrounding glial cells, a highly energy-intensive process.

Neurons swell like balloons within 15min of high MSG doses.

Arachidonic acid can harm the cell's interior.

The two most important free radicals are superoxide and hydroxyl (which can be generated from  $H_2O_2$ ).

The brain has low E but very high C levels.

Opening the Ca channels allows entry of enzymes and free radicals which destroys millions of brain cells.

C levels plummet after brain injury.

Excitotoxins selectively kill brain cells part of glutamate receptor systems.

Mg is protective when glutamate is added to glucose, since it keeps the Ca channels closed.

Ca activation ("voltage sensitive calcium channel [VSCC]") is linked to the NMDA receptor.

Hypoglycemia can cause neurons to fire spontaneously.

Kainate is a potent neurotoxin which stimulates glutamate receptors

John Lubbock: "What we see depends mainly on what we look for."

Rhesus monkeys are more ET-resistant than man, because of poor glutamate absorption.

Kainate abdominal injections cause seizures and limbic system destruction.

Immature animals are 4X more sensitive to kainate.

The FDA is captured by Ajinomoto.

#### **IV) Effect of Excitotoxins on the Developing Brain (pp. 58-90)**

The brain has over 100B neurons.

Glutamate blockers on the visual cortex of developing animals will make them blind.

There is continuous turnover of cerebral neurochemicals.

Dendrites have a 'hairy' appearance.

Nerves can repair by sprouting new filaments.

The brains can consumer fat as an energy backup source to glucose.

MSG-fed rats were shorter, fatter, dumber, and more hyperactive.

HVP is added to some bread doughs.

Babies do not have a fully-formed BBB.

Junk food has the highest concentration of ETs.

Glutamate dehydrogenase renders glutamate harmless.

Up to 10g of MSG may be added to restaurant dishes.

1mg/g in mice caused brain lesions.

E is a significant blocker of MSG damage.

Hypoxia or hypoglycemia reduce ET damage.

The mouse is the closest animal to man in terms of glutamate and aspartate sensitivity.

Oxytocin stimulates breast milk production after birth.

ETs solely enhance flavour; they have no preservative or nutritional benefits.

## **V) Creeping Death: The Neurodegenerative Diseases (pp. 90-132)**

In Huntington's disease specialised brain cells shrivel up and die.

Some neurons are only programmed to live 55 years.

Parkinson's only manifests after 80% of neurons in the substantia nigra have died.

Lewy bodies (microscopic debris collections around neurons) occur in Parkinson's and aged brains. MPTP drug use can cause the disease ("the frozen addict").

Parkinson's sufferers blink infrequently, have a mask-like expression, are rigid, can't stop forward motion, and have finger tremors at rest. 32% develop dementia.

Alzheimer's is 3% from 65-74, 18.7% from 75-84, and 47% over 85.

At age 65, 60% of nigrostratal system neurons are dead.

Marathon runner's BBB opens up.

Most salad dressings are loaded with MSG and HVP.

Neuroleptics (e.g. haloperidol) and tranquilisers cause Parkinson's.

ALS patients have double the normal blood serum glutamate levels.

MPTP is the active component of herbicide Cyperquat.

## **VI) Alzheimer's Disease: A Classic Case of Excitotoxin Damage (pp. 133-190)**

Chronic disease drives 50% of nursing home admissions.

AD is, "like a funeral that never ends."

Plaques are a failed attempt at neurons to develop new dendrites.

The elderly perform as well at cognitive tests if only they are given more time.

Recurrent severe hypoglycemia can cause brain damage.

Protein A68 is 56X higher in AD.

Dementia damage cause lower choline acetyltransferase and acetylcholinesterase (AC). However, drugs which increase AC have disappointed.

1lt/min flows into the brain.

Glucose must be transported across the BBB.

Low Mg doubles cell free radical concentration, and Mg deficiency can take 6 months to treat.

Al can bond with glutamate and pass the BBB.

Caffeine increases the brain's energy demand.

## **VII) Other Neurological Disorders related to Excitotoxins (pp. 191-214)**

Migraine can occur up to 72 hours after a single ET exposure.

Alcohol and phosphate diuretics deplete Mg.

### **Conclusion (pp. 215-221)**

Soybean milk is high in glutamate.

### **Update (pp. 222-254)**

Excess insulin stimulates 'bad' eicosanoids (whose precursor is arachidonic acid).

Cu is a powerful free radical generator.

Mitochondrial DNA mutates at 10X the rate of chromosomal.

NAC is not an ET even at high doses. It can significantly increase glutathione.

L-carnitine is a natural biochemical in all cells. the acetyl form gives an acetyl group to help make acetylcholine. ALC also increase glutathione. Lecithin improves memory.

Phosphatidylserine is a glutathione blocker.

The eyes have their own BBB.

The ideal antioxidant (AO) should:

- Have specific activity against all free radicals (FR).

- Chelate metals.

- Interact with other AOs.

- Have maximal gut absorption.

- Enter cell membrane (lipid) and cytosol (aqueous).

ALA enhances glucose utilisation by 50%. it also prevents cataracts and chelates.

Diabetic polyneuropathy of arm and leg nerves causing burning pain and numbness.

### **Appendices (pp. 255-260)**

Na caseinate, Ca caseinate, autolyzed yeast, malt flavouring, bouillon, broth, flavouring, carrageenan, natural flavouring, and whey protein concentrate are all ETs.

Anterior horn cells: grey matter of spinal cord which stimulate motor movement.

Glutamine: converted into glutamate by glial cells.

Hippocampus: a 'rolled up scroll' which serves memory.

Kreb's cycle: citric acid cycle in all cells.

L-BOAA: high in chick peas which can destroy the spinal cord.