



A Junk Diet Means a Junk Brain.

By Derek Pugh

Most people eat it sometimes but you may have heard *some of* the bad press that junk food gets. If your meals arrive wrapped in plastic, straight from the microwave after being flash frozen or deep fried then you will already know you're eating poorly. I am not going to repeat the bad news here – your waist line is probably reminder enough. However as a brain education consultant I only have more bad news for you. Junk food diets lead to junk brains. On a junk food diet your IQ suffers, your intrinsic motivation sinks, you're more likely to be a couch potato than a Rhode Scholar. As you get older the risk of suffering memory loss is substantially higher. You could be heading towards diabetes or insulin resistance or towards an early grave. Why is this?

The science behind brain chemistry is complex. Building a quality brain requires quality building blocks – use substandard materials and you get what you've paid for. The article told how the long chain essential fatty acids (omega 3s and 6s) we eat get woven into the membranes of our cells and give them strength and flexibility. The poor quality saturated fats we eat in junk food have the ability to replace the omega 3s and 6s in the membranes, but at the cost of flexibility. The result is cells that are not pliable and do not function optimally. That means lower IQ, greater risk of memory loss and possibly degenerative diseases later in life. The best sources of these fats and unsaturated oils, and the antioxidants that keep them in good condition need to be at the forefront of our healthy brain diets. This means seafood (especially cold water oily fish like salmon)), nuts, seeds and eggs and loads of coloured fruits and dark green vegetables for the antioxidants. Prunes, raisins and berries are also excellent sources of antioxidants. Eating all these should also ensure adequate vitamins (vitamin Bs are particularly important to the nervous system) and minerals like magnesium (important for memory) and calcium.

At some times of our lives, for example during pregnancy, or on a doctor's advice, we may need dietary supplements of essential brain nutrients. But there is one part of our diet that never requires supplementing – the carbohydrate part.

The brain only uses one major fuel source, glucose, a carbohydrate it demands regularly as what we call "blood sugar". Our brains need about a half cup of glucose a day (100 grams) to function properly. This is a high amount. It's easy to come by in this day and age but our ancestors roamed the plains of Africa with the nearest convenience store millennia away. In some seasons carbohydrates were undoubtedly scarce but they survived anyhow. This is because we evolved a remarkable ability to make all the glucose our brains require from protein. So we don't really have to eat carbohydrates at all, as far as the brain is concerned.

We can store enough glucose as blood sugar to last about 24 hours. After that the body's survival mechanism is to break down our own protein 'stored' as muscle or in other organs. We evolved eating a diet of fats and proteins, with occasional and limited carbohydrates, so it's no surprise to find that we can exist without bagels, French fries and Black Forest cakes. The brain is a sugar addict – but the body can supply the 100 grams it needs each day. In fact it gives priority to the brain in times of shortages, or even starvation, because the muscles and the other organs operate on a different fuel source for energy production, fat, so it can leave the glucose for the brain. This is controlled by the hormone insulin. Insulin drives sugar and proteins into the cells so they can be used. In periods of shortage all cells except brain cells will become temporarily insulin resistant so the brain will continue to function normally.

The problem is with a high sugar diet our brains are awash in a sea of blood sugar we have not evolved to cope with. Too much blood sugar for too long can create insulin resistance in brain cells as well, and that's not good. As neurosurgeon Dr Larry McCleary says "all the blood sugar in the world can't fuel a brain resistant to insulin".

So beware of sugar. Powering your brain requires just the right amount of fuel – not too much, not too little – a high carbohydrate diet may lead your body to a state where it can no longer keep the correct balance of glucose and insulin. Once you're there you're heading towards diabetes, you're probably already obese, and your life line may be shrinking. The time to do something about it is now.

Reference: McCleary, Dr Larry (2007) *The Brain Trust Program*, Perigree



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Derek Pugh is an experienced Principal and teacher in both Australian and International Schools. He now runs workshops in Brain Compatible Education for students, teachers, parents and corporate groups worldwide. Workshop participants discover the latest in neuroscience and why knowledge of the brain is a powerful tool in education; the 'SEWBaD model' of preparation for learning; what brain 'plasticity' means to education; individual learning profiles and how to use them for effective learning and teaching; how to teach or learn efficiently; and models of brain operation and function.

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