

Can food affect the way we feel?

Food can affect mood in a variety of ways. It can produce a 'high' following the first cup of coffee in the morning, or irritability and lethargy as a result of hunger or overindulgence. The effects of food on mood can be mild as in a 'low' when we are feeling hungry, severe as in the crying and irritability of infants with colic, or in hyperactivity and behavioural problems. By far the most obvious effect of food on mood can be seen in hyperactive children and those with chemical sensitivity.

In some diseases the effect on mood maybe due to hypoglycaemia or low blood sugar as in the case of diabetics. In conditions such as celiac disease and lactose intolerance, the food/mood effect occurs more because of sensory effects e.g. discomfort or pain which can result in irritability, restlessness or lethargy. Another example of food causing pain, discomfort and mood changes is in skin conditions such as eczema or hives. In the chemically sensitive (and potentially in ADHD), mood changes are due to a direct effect of food chemicals on the certain areas of the brain.

Conditions where food may cause an effect on mood and behaviour.

Some conditions where food may cause an effect on mood are chemical sensitivity; food allergy; food sensitivity; food intolerance. e.g. celiac disease, lactose intolerance; some metabolic diseases such as diabetes; ADHD. Effects from food maybe more obvious at some times than others and may be due to co-existing factors such as other foods consumed at the same time, general health and fitness, stress or fatigue.

Food allergy can cause rashes, respiratory problems, and abdominal pain which can affect mood. Egger, 1989, found that some cases of migraine headache in children was food related as were other symptoms such as hyperactive behavior and abdominal pain. In these children migraine and associated symptoms improved with an elimination diet.

Food intolerance occurs in 5-10% of the population and frequently goes unrecognised. It appears to be an exaggerated response of nerve endings in the brain in genetically susceptible

individuals (Loblay, 1986). Neurotransmitters such as serotonin, dopamine and norepinephrine are made in the body from the food we eat. Tryptophan, an amino acid found in protein foods is converted into serotonin a 'calming' chemical. Tyrosine, also an amino acid, is converted to dopamine and norepinephrine, which are chemicals that heighten arousal.

In those with Multiple Chemical Sensitivity (MCS), food sensitivities are common and may be provoked by a variety of chemical substances natural and artificial e.g. salicylates, which occur in many different foods. Those who are sensitive to naturally occurring food chemicals are usually sensitive to commonly used food additives. Reactions are dose related, may be delayed by hours, or even days and can include impaired memory and concentration, mental agitation or depression. A family history of problems related to food sensitivity is common, with twice as many women being affected as men. However, the incidence of behavioral symptoms was higher amongst males (28% females compared with 72% in males).

In a study by Loblay, children with food intolerance most often presented with 'behavioral' symptoms such as episodic hyperactivity, irritability or irrational behavior that was considered uncharacteristic and unpredictable by the parents. This is in contrast to the more consistent behavioral problems seen in children with ADHD.

While the role of food, food additives and food components as a cause of ADHD remains controversial, there seems to be no doubt that these can aggravate the condition in a number of children. Some studies have shown that up to 60 % of children with ADHD have increased behavioral problems e.g. overactivity, aggression and violence, after consuming synthetic colourings such as tartrazine (102), flavourings, preservatives, dairy foods, chemicals such as detergents and perfumes (Ward, 1997).

While the percentage of children in the control group for this study that reported reactions to synthetic colourings, flavourings and chemical solvents was lower than 12%, this is still a significant number of children. (Carter et al, 1998)

Food reactions are often difficult to recognise and can only be determined by eliminating then challenging suspect foods to see if there is an adverse effect. An Australian study of children experiencing irritability, restlessness and sleep disturbances (Rowe and Rowe, 1994) demonstrated deterioration of behavior in children after elimination and re-introduction of foods containing synthetic colouring, in particular tartrazine. Elimination of multiple items (preservatives, artificial colours, flavors) also had a favorable response in hyperactive children.

[Boris, 1994]. Atopic children with ADHD had a even higher response than the non atopic group.

Some foods that can have an indirect or direct effect on mood.

- Fats can cause lethargy
- Sugars can give a temporary 'boost of activity'
- Caffeine
- Foods containing salicylates, amines, yeast and benzoates, both natural and added.
- Gluten (in celiac disease)
- Milk can cause a variety of symptoms in those with food allergy, lactose intolerance or food sensitivity

Food and food components found to have an effect on behavior (from highest to lowest)

- Salicylates. Most commonly implicated
- Preservatives
- Nitrates (also used as preservatives)
- Amines
- MSG (flavor enhancer)
- Tartrazine (synthetic food coloring)
- Antioxidants
- Brewers yeast
- Lactose (milk sugar)
- Benzoates
- Synthetic colourings and flavourings

Sources of Food Chemicals

Salicylates: Found naturally in many fruits, vegetables, nuts, herbs, spices, spreads, teas & coffee, juices, beer and wines and medications such as Aspirin. High concentrations are found in dried fruits such as sultanas. As the highest levels of salicylates are found near the surface, just under the skin, those with salicylate sensitivity need to thickly peel foods such as apples, pears and potatoes. The natural chemical content of amines and salicylates in fruits changes with ripening. Salicylate levels decrease as the fruit ripens (eg pears, apples) while amines increase during ripening (eg banana).

Amines: These are produced during fermentation or protein breakdown and are found in cheese (particularly aged cheeses), chocolate, wine, spicy processed meats, aged meats, beer, yeast extracts, fermented products such as soy sauce, tempeh, miso and vinegar, fruits and vegetables such as banana, avocado, tomatoes

Benzoates: Found naturally in some fruits, vegetables, herbs, spices, nuts, wines, tea and coffee.

Glutamate: Found naturally in most foods, examples are tomatoes, cheese, mushrooms, stock cubes, sauces, meat extracts and yeast extracts. Pure Monosodium Glutamate (MSG) is commonly used as a flavor enhancer in foods such as soups, sauces, Asian dishes and snacks.

For more information on the levels of food chemicals in various foods contact the Department of Clinical Allergy at the Royal Prince Alfred Hospital, Camperdown, NSW. 2050.

Things to watch out for

- Cross reactions between synthetic and natural components of foods, eg benzoates and salicylates. Salicylates are also found in flavourings (eg peppermint), perfumes, scented toiletries, eucalyptus oils and some medications.
- Individuals with food sensitivity and MCS may react to a number of different foods and chemical constituents
- Read labels carefully when purchasing processed foods.
- Hidden sources of foods, food additives. To avoid these it is best not to consume processed foods but to purchase fresh, whole foods in season and prepare your own meals, snacks etc.
- Reactions from pesticide residues may also occur in sensitive individuals. In order to avoid pesticide residues in foods it is best to purchase fresh organically grown whole foods.

Where can I go for help.....?

Recognition of food reactions from specific food and food chemicals is often extremely difficult to determine because of the number of foods and food additives involved, the grouping of these and hidden sources. An elimination diet and challenge procedure is the only way to be sure and this is best done with professional guidance. Usually foods frequently consumed and enjoyed the most are at fault, as these are often 'comfort' foods used in times of stress there can be a strong emotive feeling about giving them up. Social occasions, peer pressure and non-conformity can all be distressful to deal with and for this reason consultation with an allergy

dietician is recommended.

Bibliography

Boris, M & Mandel, E. (1994) Food additives are common causes of the Attention Deficit Hyperactivity Disorder in Children. *Annals of Allergy* 75(5); 462-8

Carter, C M et al. (1993) Effects of a few foods diet in attention deficit disorder. *Archives of Disease in Childhood* (69); 564-8

Egger, J et al. (1985) Controlled trial of oligoantigenic treatment in the hyperkinetic syndrome. *Lancet* (1): 540-5

Loblay, R & Swain, A. (1986) Food intolerance In Wahlqvist M and Truswell, A (Eds) *Recent Advances in Clinical Nutrition*. John Libby, London. pp.1659-177.

Rowe, K S & Rowe, K L. (1994) Synthetic food colouring and behaviour: a dose-response effect in a double-blind, placebo-controlled, repeated-measures study. *Journal of Paediatrics* (125);691-698.

Ward, N I. (1997). Assessment of chemical factors in relation to child hyperactivity. *J Nutr & Env Med (ABINGDON)* 7(14):343-342.

Other website links

Food Intolerance Network Australia link [FINA website](#)

Royal Prince Alfred Hospital, NSW, Australia [RPAH Allergy Clinic](#)

Dietitian [Joan Breakey website](#)

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