

food and mood

**The quarterly
newsletter of
the Food &
Mood Project**

**Issue no. 2
Winter 2000/01**

Food and the Brain

By Amanda Geary

Neurotransmitters are the brain chemicals that influence how we think, feel and behave. The growing list of 'informational substances' which can function as neurotransmitters includes amino acids (the building blocks of protein), peptides (chains of amino acids), hormones and gaseous neurotransmitters such as nitric oxide.

Maintaining the correct level of neurotransmitters prevents the brain from becoming over- or under-stimulated and the brain has a number of 'homeostatic mechanisms' for keeping the brain in balance. However for reasons that are likely to be a combination of a genetic predisposition working together with environmental influences, certain people can suffer with abnormal levels of certain neurotransmitters. With depression, for example, there appears to be an associated reduction in available serotonin (5-hydroxytryptamine) where low moods are relieved when serotonin levels are raised.

Serotonin and depression

Low levels of mood-enhancing serotonin can be redressed with prescribed medication that includes the tricyclics (such as Amitriptyline) and SSRIs or selective serotonin reuptake inhibitors (such as Prozac/fluoxetine). Herbal remedies such as St John's Wort (*hypericum perforatum*) also appear to owe their demonstrated effectiveness for the treatment of depression to an ability to enhance low serotonin levels.

Food also has an important part to play in emotional and mental health, as what you eat can affect levels of serotonin as well as other neurotransmitters. It seems likely that food cravings in some people are a subconscious drive to increase low serotonin levels and improve mood.

Food and mood

Serotonin is a neurotransmitter that is associated with various moods and behaviours including reducing appetite and curbing impulses, enhancing mood and promoting sleep. Serotonin is made in the brain from tryptophan, an amino acid, or protein fragment, found in protein-containing foods. Therefore, eating tryptophan-containing foods is one way of potentially boosting brain serotonin levels.

However, the absorption of tryptophan across the blood-brain

FROM THE EDITOR

This, the second edition of the newsletter, provides you with more food for thought as we take a look at how food can affect the levels of neurotransmitters



in the brain. Tryptophan, an essential amino acid found in protein foods, is under the spotlight in our main article, as tryptophan is converted in the brain to mood-enhancing serotonin.

A recent survey by Mind reported that 76% of people with mental health problems found that certain times of the year had a negative influence on how they felt. The winter months were the worst for many people, with Christmas and New Year proving to be particularly difficult times. As food plays such a huge part in the festivities, Christmas is probably not a time to be on a 'special' diet. But if you do want to experiment with changing what you eat at Christmas there is certainly no need to go without treats. There are now more alternative products available to enjoy, and the Food Cupboard has ideas for festive foods that could improve your mood.

The scientific research available on the food-mood connection is scant. So, one of the aims of the Food & Mood Project is to collect 'anecdotal' evidence from individuals who have made changes to their diet and benefited as a result. If you are interested in how you could take part, do read 'Symptom Scoring' for ideas.

Finally, you may have seen on television the devastation caused by the recent flooding in Sussex – Lewes in particular. Regrettably, a week of mail sent to the Food & Mood Project PO Box was lost as the main sorting office disappeared under 10 feet of sewage- and diesel-contaminated flood water. If you (or anyone you know) is waiting for a reply to a letter, Workbook order or Newsletter subscription and it was posted around the time of the flooding (Friday 13th October), please write again!

Keep on sharing the food mood message.

*Amanda Geary
Food & Mood Project Founder*

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Explore the relationship between what you eat and how you feel

barrier into the brain where it can be converted into serotonin is helped by eating carbohydrate-rich foods (see the diagram on this page). Because of the serotonin-enhancing effect of carbohydrate foods, many cravings for sugary or starchy snacks can be a subconscious attempt to correct the unpleasant symptoms of low serotonin levels in the brain. Carbohydrate cravings (for sweet and starchy food such as biscuits, cake, bread, pasta) could be the brain crying out for more serotonin.

Tryptophan and carbohydrates

What this means in practice is that to get the full benefit of the tryptophan from the protein food you have eaten, you need to follow your tryptophan protein meal with a food that contains mostly carbohydrates. But, to avoid a rollercoaster sugar high followed by a low, you need to take care with the type of carbohydrate you choose to do this. (See Food & Mood issue no. 1 for more information on the best carbohydrates to choose.)

Because eating a carbohydrate-rich meal boosts sleep-promoting

serotonin levels, having something starchy (like pasta) at lunchtime could prove counterproductive. If you want to stay alert during the afternoon, you need to avoid raising your serotonin levels. So, if you find yourself needing an afternoon nap whilst you are still at work, then look at what you had for lunch. During the day if you need to stay awake, alert and active, then protein-rich meals that include meat, poultry, fish, beans, nuts, seeds, soya or cheese may make better choices for foods to eat at lunchtime.

Tryptophan-containing foods

Tryptophan is just one of eight 'essential' amino acids (protein building blocks) that cannot be made by the body and which have to be obtained from food in relatively balanced amounts.

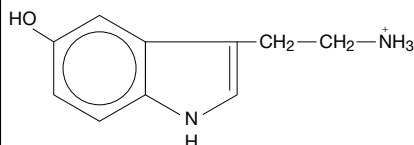
Some good sources of tryptophan, together with the approximate amounts present in common foods are given below. The tryptophan content of foods varies and these figures represent typical levels present in an average-sized portion. The tryptophan-containing foods listed here are those less likely to be linked with food sensitivity reactions.

Amount of tryptophan per portion of various foods

FOOD	PORTION SIZE	TRYPTOPHAN
chicken	100g/3.5oz/0.5cup	360mg
turkey	100g/3.5oz/0.5cup	340mg
tuna	85g/3.0oz/0.5cup	280mg
salmon	85g/3.0oz/0.5cup	260mg
kidney beans	170g/6oz/1cup	180mg
rolled oats	85g/3oz/1cup	175mg
lentils	200g/7oz/1cup	160mg
chickpeas	200g/7oz/1 cup	140mg
pumpkin seeds	30g/1oz/0.25cup	120mg
sunflower seeds	30g/1oz/0.25cup	100mg
baked potato with skin	1 large	75mg
tahini (sesame butter)	1 tablespoon	56mg
walnuts	25g/1oz/1/3cup	50mg
avocado	1 medium	40mg
almond butter	1 tablespoon	40mg

Quick guide to food and mood

Neurotransmitter: serotonin



5- hydroxytryptamine (serotonin)

Important for: appetite control, mood and sleep

Produced from: tryptophan, an amino acid found in protein foods which is carried into the brain in the presence of carbohydrates

Main food sources: poultry, oil-rich fish, beans, baked potatoes, oats, nuts and seeds

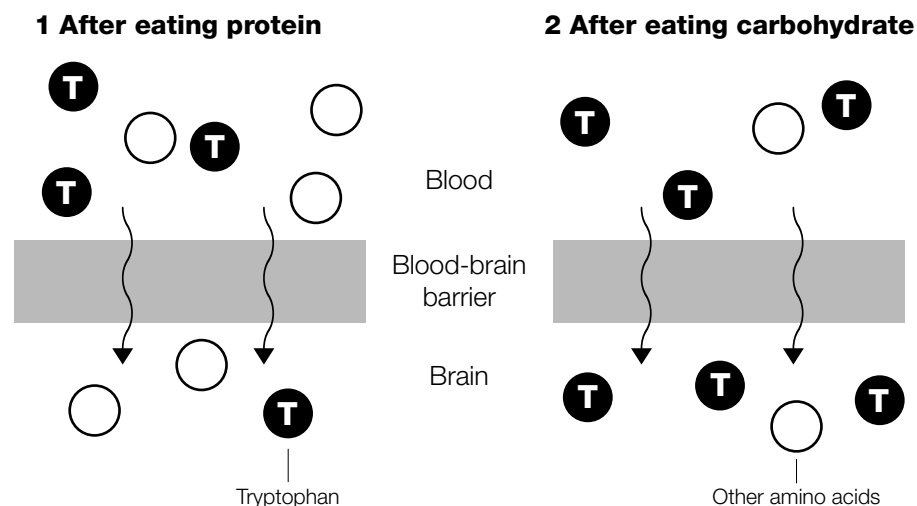
Helped by: carbohydrates (bread, pasta, potatoes) (Food & Mood issue no. 1 contains recommendations for the best carbohydrate foods to choose to help the absorption of tryptophan.) vitamin B6, vitamin C, folic acid, biotin, zinc

Absorption of tryptophan

1 After eating protein, tryptophan is present in the blood but has to compete with other amino acids for absorption across the blood-brain barrier.

2 After eating carbohydrate, insulin is released which selectively binds with

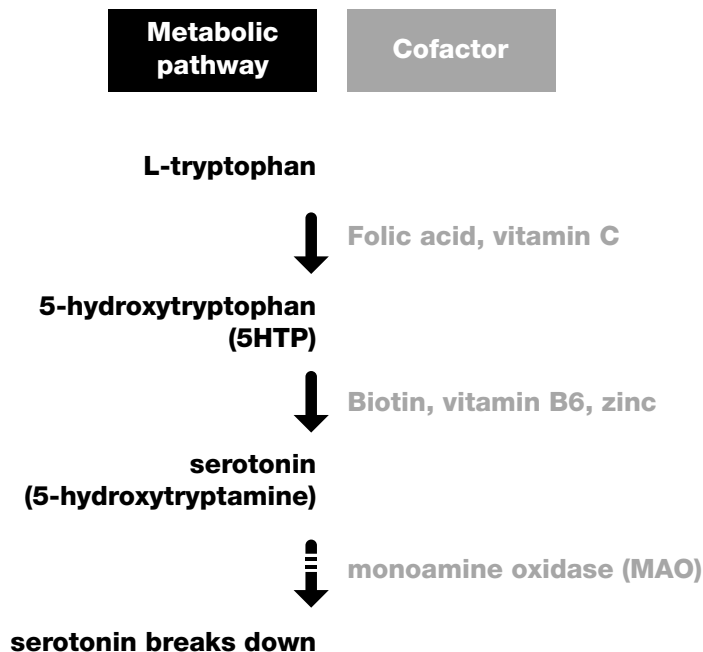
the other amino acids to transport them to muscles. Tryptophan is not taken, however, and is left behind at the blood-brain barrier. Without any competition more tryptophan is able to cross into the central nervous system, where it can be converted into mood-enhancing serotonin.



Serotonin pathway

The life 'journey' of a brain chemical is described as its 'metabolic pathway' and a brain chemical can have several 'identities' during its lifetime. The metabolic pathway of serotonin starts with the amino acid tryptophan, found in protein foods.

Each stage of the 'journey' requires various cofactors (or helpers) that include enzymes, vitamins and minerals. The pathway concludes with the breaking down or degradation of the neurotransmitter by the enzyme monoamine oxidase (MAO).



Help is at hand

The Food & Mood Project recently wrote to all members of the British Association of Nutritional Therapists (BANT) asking for details from practitioners experienced in treating emotional and mental health problems using nutritional therapy. The Food & Mood Project now holds a list of some 25 registered nutritional therapists throughout the UK who can be contacted for individual help. Areas of expertise have been included and some practitioners also provide a postal or telephone consultation service.

If you would like to receive the full list of UK practitioners, please send an sae plus £1 in stamps to the Food & Mood Project.

Food & supplement cupboard



Xmas Treats

Abstaining chocolate lovers can indulge in some special alternative treats this festive season. D & D chocolates produce Christmas carob confectionery in the form of Father Christmases, tree decorations and boxes of chocolates, all made from carob – a caffeine-free bean used to produce 'chocolate' similar in taste and texture to the 'real thing'.

Available mail order from
D & D Chocolates Ltd, 261 Forest Row, Loughborough LE11 3HT.
Tel: 01509 216400.



The Village Bakery provide a range of organic and delicious wheat free, sugar free and/or gluten free Christmas

goodies. Highly recommended are the Christmas cakes and puddings (which are dairy-, wheat-, gluten- and sugar-free) and mince pies (dairy-, wheat- and gluten-free). Also available all year round are wonderful rye breads and oat cake biscuits.

Available mail order from The Village Bakery Melmerby Ltd, Melmerby, Penrith, Cumbria CA10 1HE. Tel: 01768 881515. Email: admin@village-bakery.com www.village-bakery.com

Kava (piper methysticum)

Kava (piper methysticum) is receiving much interest as an alternative treatment for anxiety that is comparable to conventional medicines such as Valium (see Research Bites). It is available mail order from the Nutri Centre in London which is an excellent source of most nutritional/ herbal supplements and also books, magazines and journals.

The Nutri Centre (also the Hale Clinic) is at 7 Park Crescent, London, W1N 3HE. Telephone: 020 7436 5122. Email: Nutricen@aol.com

Are you satisfied?

There are a number of neurotransmitters responsible for controlling appetite. Some of these increase the desire for food, others create a feeling of satisfaction and fullness. Endorphins, noradrenalin (norepinephrine) and neuropeptide Y all increase the appetite, whereas appetite suppressing neurotransmitters include cholecystinin (CCK), serotonin and corticotropin releasing factor, which all reduce the desire for food. Levels of neurotransmitters can be influenced by various means including the amount of sex, exercise, breathing patterns, drugs and food. Some food-related influences on the appetite controlling neurotransmitters are given on the right.

Neurotransmitters that raise appetite include:

endorphins increased levels can result from eating chocolate, sugar, alcohol. Also sex, exercise, yogic breathing and meditation.

noradrenalin (norepinephrine) increased levels can result from eating protein (such as meat, fish, beans, nuts) particularly foods containing tyrosine and phenylalanine (amino acid protein fragments)

neuropeptide Y fasting or long gaps between meals and exercise all raise levels of this neurotransmitter

Neurotransmitters that reduce appetite include:

cholecystinin (CCK) increased levels of this neurotransmitter are triggered by food in the small intestine and give rise to a feeling of fullness after eating

serotonin carbohydrates (starchy, sugary foods) raise levels of serotonin because of their ability to increase absorption of tryptophan. Tryptophan, an amino acid found in protein-containing food is converted to serotonin in the brain. Some foods such as avocados, bananas, pineapple, plantain, plum, tomatoes and molluscs (such as octopus) contain significant amounts of ready-made serotonin.

corticotropin releasing factor this is released in response to stress. Stress reduces the effectiveness of the digestive system and also our desire to eat.

GOOD MOOD FOOD

Carob smoothie

Dedicated chocolate lovers can now enjoy a nutritious good mood chocolate-tasting treat. This smoothie – a drink or liquid snack – uses carob which is very similar to chocolate in taste but does not contain caffeine. The avocado creates a creamy texture and body and provides protein including the good mood nutrient tryptophan. It is also a good source of essential polyunsaturated oils and the antioxidant vitamin E. Avocados also contain good mood B-vitamins and potassium as well as many other vitamins and minerals. The smoothie needs to be prepared shortly before eating to enjoy the fresh taste.

Equipment:
blender

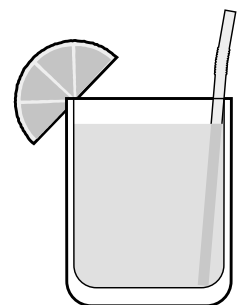
Preparation time:
3 mins

Cooking time:
none

Ingredients (serves 1-2):
1 avocado
600 ml rice milk (vanilla flavoured tastes good in this recipe)
1 tblspn carob powder
tspn lemon juice (optional)

Method:
Peel avocado and remove stone. Cut into small pieces.
Put all ingredients into blender and blend for approx 1 minute.
Pour into glasses and drink.

Tip: Use half the amount of rice milk to turn this into a creamy desert.



Food as



drug

Levels of mood-altering endorphins can be increased after having certain foods and drinks. Endorphins are the body's own opium-like substances which create feelings of euphoria, high esteem and also dull physical and emotional pain. They are associated with the 'runner's high' that can be experienced during strenuous exercise.

Certain foods such as chocolate, sugar and alcohol have an endorphin raising effect which may be why these foods are potentially so addictive. The opioid excess theory of autism proposes that certain other foods, if incompletely digested, can form peptides that are opium-like and which affect behaviour. In susceptible people, opioid peptides can be formed from gluten (in wheat, rye, oats and barley) and casein (from milk and milk products).

A urine test can measure levels of a 'marker' substance called IAG (indolyl acryloyl glycine) which is an abnormal metabolite of tryptophan associated with raised levels of these problem opioid peptides. People showing raised IAG in their urine usually benefit from a gluten- and casein-free diet.

The Autism Research Unit at Sunderland University, which offers the urine test as part of their on-going research programme, can be contacted at: tel 0191 510 8922 fax 0191 567 0420 email aru@sunderland.ac.uk

Chewing things over

The sense of satiety, or feeling of fullness, after a meal is controlled by a neurotransmitter hormone called cholecystokinin which is released as the food leaves the stomach and enters the duodenum. This feedback mechanism takes time to work and if you don't chew your food properly and eat too fast it is possible to overeat before the message that you are full gets through to the brain.

Also, if you are relying on your brain to tell you when to stop eating, it is easier to overindulge in fatty foods than to have too many

carbohydrate foods. Remember, your stomach doesn't have teeth and needs you to chew your food well to release important nutrients from the food.

The phrase 'chewing something over' in your mind to describe thinking through something may have a literal meaning as there is some evidence that the physical act of chewing improves memory! And from another point of view, apparently there is a Chinese saying that cautions us with the words: 'hasty food, hasty energy'.

Pinch your ears, stifle a food craving

In oriental medicine, the little bud of cartilage directly above your ear canals (called the tragus) is the acupuncture spot that controls hunger. Acupuncturists claim that lightly pinching that area for one minute should cause food cravings to subside.

From Men's Health, October 2000. Cutting provided by Pdraig Breatnach, Brighton

Please let us know if you've made this work for you!

Eating out?

In the last issue of Food & Mood we looked in some depth at the use of the Glycaemic Index for guidance on which foods to choose to avoid the highs and lows in mood and energy associated with fluctuating blood sugar levels.

Recent research has tested the glycaemic index of six different ethnic meals. At separate sittings the blood sugar response was tested in eight willing volunteers after eating 50g of a meal for breakfast. The meals that were tested included an Indian meal (lentil curry with rice), Italian (spaghetti bolognese), Chinese (stir-fried vegetables and chicken with rice), Greek (lentil stew), Western (sirloin chop and vegetables) and Lebanese (sandwich with unleavened bread and hummous). The result? If you want a meal that has the minimum effect on blood sugar and which should keep you going for longer, choose Lebanese or Western food. Italian and Greek meals, according to this study, had the highest effect upon blood sugar.

Book corner

FOCUS ON:

Feel-good food – a guide to intuitive eating

by Susie Miller & Karen Knowler published by The Women's Press Ltd, London, 2000, price £8.99.

Exploring the relationship between foods and moods may lead you towards the idea of eating intuitively. If so, then this little gem of a book will certainly help you to get started. Eating intuitively is a skill that, for many, takes time to develop. It involves learning to distinguish between impulses, hunger sensations and cravings that are the result of food sensitivities or an addictive relationship with food and those that represent a genuine need for nutrients. This book does, however, advocate moving towards a predominantly raw food diet because, it is claimed, choosing between raw foods is where the intuition apparently works best and there is the added benefit of obtaining more nutrients from uncooked foods. Whether or not you want to completely embrace uncooked cuisine, this book is well worth a read.

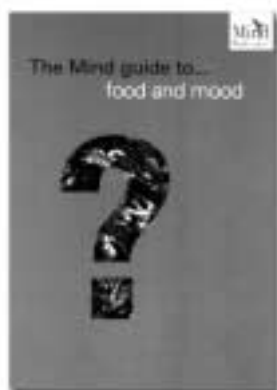


NOW AVAILABLE:

The Mind Guide to Food & Mood

published by Mind, September 2000, price £1 (plus p&p)

Available from Mind Mail Order Service, 15-19 Broadway, London E15 4BQ. 020 8221 9666. Email: publications@mind.org.uk. A 12 page easy-to-read guide introducing readers to the subject through a series of questions and answers.



COMING SOON

The Food & Mood Handbook by Amanda Geary published by Thorsons (May 2001) price £8.99.

A full-length illustrated volume containing a wealth of information on the food-mood connection. The Food & Mood Handbook contains: clear guidelines for changing what you eat to improve the way you feel, explanations for some of the effects of food on mood, ten top quick-and-easy good mood food recipes, full details of the Mind meal for mental health. Order your copy now!

RESEARCH BITES

Kava for anxiety

Pacific island herb rivals valium in the treatment of anxiety

'Efficacy of Kava extract for treating anxiety: systematic review and meta-analysis'**, Pittler MH, *Journal of Clinical Psychopharmacology* 2000 Feb; 84-89.

Researchers at the University of Exeter in the UK have scoured the world's databases for results of studies that were measuring the effectiveness of Kava extract (piper methysticum) for the treatment of anxiety. Having carefully sifted through the data which included randomised, double-blind placebo controlled trials (see issue 1 for a brief explanation of this term) what they found was convincing evidence for the use of this herb. Kava is a member of the pepper family and is found in the pacific islands. It is non-addictive and has fewer side-effects than conventional medications (such as the benzodiazepine Valium) which are used for symptomatic treatment of anxiety. In the various studies, the daily dose of the active ingredient, 'kavalactones', (extracted from the rhizome or swollen underground stem) varied from 60mg to 240mg per day taken for periods of 1 week to 6 months. Benefits were measured as a significant reduction in scores on the Hamilton Anxiety Scale. As a result of their research the authors were sufficiently convinced to recommend Kava as a 'treatment option for anxiety that is worthy of consideration'.

If you are interested in trying out Kava, then take a look at 'Food and Supplement Cupboard' for where you can obtain it. And you are invited to ring or write to The Food & Mood Project to share how you get on.

* A 'systematic review' focuses on a just a few studies in order to evaluate their findings. A 'meta-analysis' is an 'analysis of the analysis' and aims to summarise the results of a larger number of different studies.

SAD?



Seasonal Affective Disorder is associated with symptoms of depression, lethargy, loss of libido and cravings for carbohydrate foods to raise serotonin levels. Low serotonin levels found in SAD sufferers may be due to a hormone imbalance and the effect of higher than normal levels of the hormone melatonin.

Melatonin is a hormone made from tryptophan, via serotonin, and it is important for mood and sleep/wake cycles. Melatonin is secreted by the pineal gland and the amount released is related to the amount of darkness in a 24 hour period. The longer the night, the more melatonin is secreted, for we are naturally encouraged by this circadian rhythm to sleep when the sun goes down. Light falling on the retina of the eye reduces the amount of serotonin that is converted to melatonin, which is why many SAD sufferers benefit from using light boxes that create artificial daylight.

Panic attacks

This case study has been written by Jenny (not her real name) who took part in the original Food and Mood Project by attending a series of Food and Mood workshops and participating in a follow-up survey of group members. Jenny was a committed and enthusiastic member of a group who met every fortnight for three months to share and learn about food and its effect on mood. Some 15 months later, she is still benefiting from the changes she was able to make.

‘Picture the scene: I’m on a busy tube train; I have a lot more stations to go before I reach my destination but I have to get off the train and I have to get off NOW. I can hardly breath and I’m not sure where I am; I just know I need to get away from all the people around me.

Panic attacks were part of my day; they happened frequently and without warning and I couldn't seem to find a cure. I often had to desert my friends in a pub or club. I would leave restaurants before the main course had been served. As you can imagine, all this and sleepless nights as well, led me to feel very anxious. At this time I could rate my anxiety levels at 8 on a scale of 0-10. But all of that is now behind me.

I thought my problems were

psychological but then I discovered the Food and Mood Project and my life changed. I learned that most of my symptoms could be alleviated by cutting down on caffeine. I cut out

coffee and reduced my intake of tea, replacing these with herbal teas and water. I could now give my anxiety levels a score

of only 2 out of a possible 10.

Some months later I have now changed some of the foods that I eat and instead of dairy foods I now have more soya products. I have also introduced more organic fruit and vegetables into my diet. Recently I have changed to eating foods that are wheat and gluten free and I find that I now sleep well and have lots more energy. And the panic attacks? They are a thing of the past.’

Panic attacks were part of my day

Symptom scoring

The ‘Panic Attacks’ case study (left) includes some ‘symptom scores’ for Jenny’s anxiety levels which clearly show how much better she felt as a result of cutting out caffeine. Keeping a record of any alterations you make to your diet (or in the supplements you take) and giving a score to the ‘outcome’ of these changes will add another valuable dimension to your explorations. It can be done quite simply – a note of a ‘symptom’ together with a number that illustrates just how good (or bad) you’re feeling is all that’s needed. Doing this once or more each day can help you to focus on what you are trying to achieve and enables you to track your progress.

If you do decide to keep a Food and Mood Diary (with or without scores) then The Food & Mood Project would like to hear from you. Information of this sort can provide a strong ‘evidence base’ for the effectiveness of nutritional therapy in the treatment of emotional and mental health problems. With sufficient evidence to demonstrate the importance of the food-mood connection it is hoped that nutritional therapy will become available through the NHS for those who most need it.

The Food & Mood Project has received a number of enquiries from students and others interested in researching the food and mood connection and is very pleased to offer what assistance it can in order to further the understanding of this important subject. In return, we are interested to hear of any small scale research projects being done that are not likely to be widely reported in the general media.

Sending ‘your story’ to add to our collection of case studies is one way you could contribute to the growing ‘evidence base’ for the affect of food on mood. For other ideas on how you could help, including how to score your symptoms (as Jenny did) to produce a clear record of the improvements experienced, read ‘System scoring’ on the right.

Food & mood workshop dates

Workshops to explore the relationship between the food you eat and the way you feel with Amanda Geary BSc (Hons), PGCE, Dip. Nut., member of the British Association of Nutritional Therapists, Founder of the Food & Mood Project.

Topics covered will include:

- Stimulants (coffee, tea, chocolate)
- Addictions & allergies (how cravings can signal hidden sensitivities)
- Staying in balance (managing fluctuating blood sugar levels)
- Supplements (do we need them?)

WORKSHOP DATES FOR SPRING 2000

(price differences due to subsidies)

Saturday 20th January 2001

10.00am-4.00pm

WEA (Worthing Branch), Adult Education Centre, Union Place, Worthing. Cost: £8. For enrolment details please ring: 01903 233836.

Saturday 24th February 2001

10.30-4.30pm

Brighton Natural Health Centre, 27 Regent Street, Brighton. Cost: £20. To book a place please ring: 01273 600010

Saturday 3rd March 2001

10.00am-4.00pm

Connaught Adult Education Centre, Connaught Road, Hove. Cost: £15. To book a place please ring: 01273 736491

If you can't travel to these venues and would like to host a Food and Mood Workshop in your area, please contact Amanda Geary at The Food & Mood Project.

Food and mood in the news

Since the publication of the autumn issue of the newsletter, the Food and Mood Project has been featured in the following publications:

Family Circle magazine (Nov issue)
Glasgow Sunday Herald magazine (8th October)
Marie Claire magazine (October issue)
Open Mind journal (Sept/Oct issue)
Optimum Nutrition Journal (Autumn issue)
Positive Health magazine (Sept issue)
Positive News newspaper (Autumn issue)
Times Educational Supplement (3rd November)

If you see any food and mood clippings of interest please do send them in. Also, if you know of any publication that would like to include some information on the Food & Mood Project, the Workbook and/or Newsletter please let us have their details.

Food & Mood Newsletter

**In the next (Spring) issue out March 2001:
The importance of fats**

Deadline for contributions 31st January 2001

WISE WORDS

'The primary seat of insanity generally is in the region of the stomach and intestines'

Pinel, French psychiatrist, 1807



The Food & Mood Project was started in 1998 with a Millennium Award from Mind, the mental health charity. The aim of the Project is to empower individuals to explore the relationship between diet, nutrition and emotional and mental health, and to share this information with others.

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The Food & Mood Project
PO Box 2737
LEWES
East Sussex BN7 2GN
UK
+44 (0) 1273 478108

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