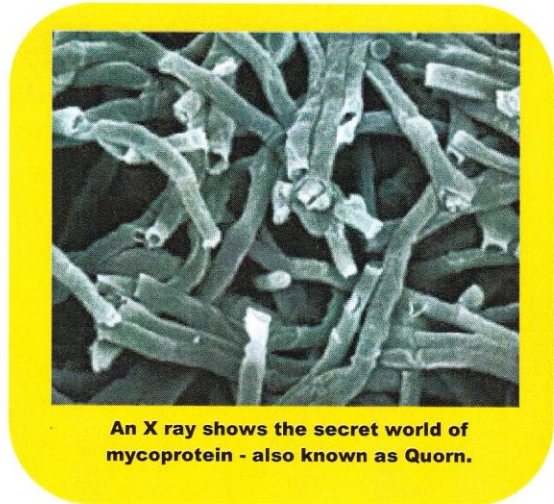


- ⇒ **Yoga and you: the truth**
- ⇒ **Say no to caffeine**
- ⇒ **Run yourself slim**
- ⇒ **Meet the new super fruits**

MIGHTY MYCOPROTEIN



An X ray shows the secret world of mycoprotein - also known as Quorn.

By Helena Heald

Mycoprotein and Health

“What is mycoprotein?” I hear you ask, but you’re not alone. One in five households in the UK eat it every year, but few know exactly what it is. Perhaps if I told you that mycoprotein is sold in this country under the name of Quorn? Ring any bells? Well known as a meat alternative for the past twenty years, Quorn has recently seen a revival as a slimming food, following an extensive ad campaign. This is all thanks to *fusarium venenatum*, a single celled protein that was developed into a food-stuff in the 1980’s.

Production

Mycoproteins were first produced in an effort to find a more sustainable protein source for the world’s ever growing population. The typical production process of mycoproteins is a fermentation process; similar to how beer is made. In a fermenter, water and glucose are added to the *fusarium venenatum* fungi. These fungi continue to grow over five to six hours, whilst further nutrients are added and oxygen and temperature are carefully controlled. Finally, the water is removed once the fungi have matured and the mixture is then blended with egg white (to improve the texture) and colourings and flavourings. This is then steam cooked and finally frozen before it can be made into a variety of different food products.

So, the big question - can it make us healthier? Simply put, yes it can. On paper, mycoproteins have it all; fibre, zero cholesterol and low in fat. As most *Health & Happiness* readers would be aware, excess intake of cholesterol is a leading cause of artery damage and heart disease and people are now becoming ever more aware of the damage done by a fatty diet. The mycoprotein in Quorn also gives it another special quality - the ability to keep you feeling full - this makes mycoproteins a useful tool for slimmers. Finally, preliminary trials suggest that the mycoproteins in Quorn can even aid in the management of type two diabetes by decreasing the rate of glucose absorption and reducing the risk of high peaks of insulin (thought to be the cause of type

two diabetes). So it would seem that everyone should be replacing their meat with mycoproteins, or should they?

Problems

Mycoproteins aren’t for everyone. The use of egg-white in the process makes Quorn not suitable for vegans, although the manufacturers are looking into an alternative. As with most foods, an intolerance to the mycoproteins in Quorn is possible; the Food Standards Agency states that “research estimates that between 1 in 100,000 to 200,000 people will react to it”. This is, however, a very small part of the population. Concerns have also been raised as to how sustainable mycoprotein production is, as a considerable amount of resources are used in its production (though no clear data is available as to how this compares with conventional meat production).



Familiar packet but a not so familiar as a fungus

The benefits of mycoproteins and their uses in Quorn products do seem to outweigh their shortfalls - why not try Quorn to find out for yourself?

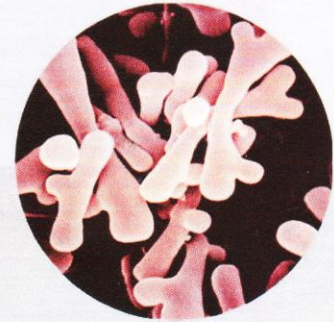
For more info check out www.mycoprotein.org



A Fit Bowel For A Fit Body

By Sophie Edwards and Megan Gill

The adult human bowel averages 10 metres in length and is home to approximately 100 trillion bacteria weighing over 1 kilogram. Some of these bacteria are detrimental to our health, but most of them are beneficial. These beneficial bacteria are referred to as 'friendly' bacteria, as they cause us no harm. In fact, they are essential for life, as they aid the digestion of food allowing the bowel to absorb nutrients. Without our 'friendly' bacteria, for example, *Lactobacilla* and *Bifidobacteria*, we would not be able to digest and absorb the majority of our diet.



In a normal, well-balanced diet, our body's bacteria should be kept in balance. However, illness and medicines cause the number of gut bacteria to change, affecting the balance between 'friendly' and 'unfriendly' bacteria.

In the event of an illness you may be prescribed antibiotics, which do remove 'harmful' bacteria from our gut, but also remove the 'friendly' bacteria. Taking a probiotic supplement can restore your body's supply of these beneficial bacteria.

Probiotics are live strains of 'good' bacteria, which help our digestive system work efficiently. How can we encourage our 'friendly' gut bacteria?

Probiotics:

- Stop the growth of harmful bacteria
- Improve digestion of food
- Stimulate the body's immune system
- Help make essential vitamins

Probiotics help to prevent:

- Bowel Infections and Disease
- Tooth Decay and Gum Disease
- Skin Infections
- Respiratory Infections

A prebiotic is a nutrient which specifically stimulates the growth of the naturally occurring microorganisms in the digestive tract, specifically Lactobacilli or Bifidobacteria.

Probiotics are found in some dairy products, such as yoghurt, as well as supplements such as Yakult. Prebiotics are found in fruit and vegetables, such as leeks and bananas.

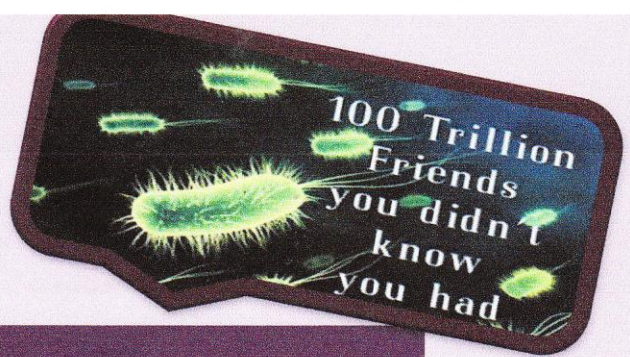
A daily probiotic can help to top up levels of good bacteria, whilst prebiotic foods can encourage your own beneficial bacteria to multiply.

For more information please visit:

http://www.beta-glucan-info.com/probiotic_facts.htm

<http://www.ibshealthcare.co.uk/Probiotics-and-Prebiotics>

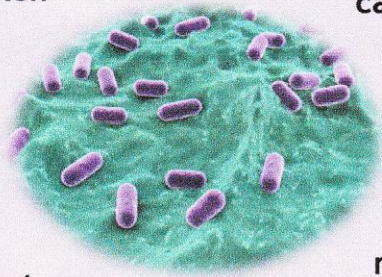
Probiotics



Promote Performance

Probiotics are

live microorganisms, which when taken in the right amount give a health benefit to the body. They are friendly bacteria, located in the gut and they come in many different forms. These bacteria act as a balancing agent for non-friendly gut bacteria such as E-coil. When there is a lack of friendly bacteria it can cause digestive upset, headaches and sluggishness. Lactobacillus acidophilus is a probiotic and can create a natural form of antibiotics in the body which fight pathogens (bad microbes) in food and the environment. Interest in probiotic supplements is on the rise. Scientific evidence suggests that you can treat and even prevent some illnesses by using probiotic daily. The best case for probiotic therapy has been in the treatment of diarrhoea and irritable bowel syndrome. In an experiment carried out



recently, probiotic reduced antibiotic associated diarrhoea by 60%, when compared with a placebo. But probiotics have many other uses than just treating diarrhoea such as promoting anti-tumour and anti-cancer activity in the body. Also probiotics enhance the immune system's response to things such as viral infections in the respirating tract so reducing cold and flu symptoms. Another benefit of probiotics is the increase ability to absorb calcium so linking to stronger bones and teeth in young people and a reduce risk of osteoporosis in old age. Probiotics can help you digest food and to assimilate the nutrients from food.

Some probiotic foods date back to ancient times, such as fermented foods and cultured milk products. Most probiotic supplements that have sugar or glucose in actually slow the growth of healthy lactobacilli. A healthy diet rich in cultured organic products like yogurt, goat's cheese and buttermilk is much better.



The British Olympic rowing team

consume foods containing high levels of probiotics in their diet. The British Olympic rowing team were very successful in the 2008 Olympic games, they won 6 medals including 2 gold. The sport of rowing is one of the most strenuous and energy consuming endurance sports in the Olympics, putting stress on the whole body. Probiotics can help the body increase its energy by increasing the ability to digest food and to assimilate the nutrients from food to promote performance. The British Olympic rowing team uses Yakult. Yakult is a



yogurt range which is a good source of probiotics available to everyone. Yakult is the original probiotic. One bottle contains a minimum of 6.5 billion cells of the unique probiotic strain bacteria isolated by Dr. Shirota.

To find more information about Yakult visit www.yakult.co.uk

To find more information about probiotics visit

www.medicinenet.com/probiotics

Women's Fitness 1st

Visit our website www.women'sfitness1st.co.uk

Microbes for Dinner?

Healthy living - yes, you've heard it all before. 5 a day, yes; exercise, yes; Microbes wait, what was that - **Microbes?** Mycoprotein, derived from the fungus 'Fusarium venenatum', is here to prove that yes, really, tiny things can make a huge change to your health...

Mycoprotein, the main ingredient in Quorn™ products, is a healthy vegetarian source of protein that unlike many forms of meat, is low in fat and saturates containing no cholesterol or trans fat at all. It may seem a dream come true but mycoprotein is also an excellent source of dietary fibre, which despite being vital for the digestive system lacks in our common source of protein - meat and fish.

Mycoprotein is made from the fermentation of the fungus 'Fusarium Venenatum' which is part of the 'ascomycota' - the largest group in the Fungus family. The fungus, which was originally found in a soil sample in Marlow, Buckinghamshire, is now produced on a huge industrial scale and is added to 40m high pressure fermentors, allowing it to grow. During this process many nutrients are added and also free range egg and seasoning, to form mycoprotein which is then harvested and used in Quorn products.

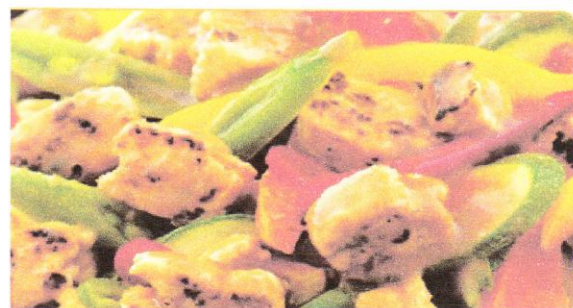
Comparative Nutrient Content of Quorn products vs Meat Equivalents.

Food	Cals/100g	Total Fat (g/100g)	Sat Fat (g/100g)	% Energy from Total Fat	Cholesterol (mg/100g)
Quorn Mince (frozen)**	94	2	0.5	19	0
Beef Mince (Raw)*	225	16.2	6.9	65	60
Quorn Burger (frozen)**	146	4.8	0.5	30	0
Beefburger (raw)*	291	24.7	10.7	76	76
Quorn Chicken Style Nuggets**	207	11	1.3	48	0.005
Breaded Nuggets *	265	13	3.3	44	54

*SOURCE: MCCANCE AND WIDDOWSON 'THE COMPOSITION OF FOODS' SIXTH EDITION.
** SOURCE: MARLOW FOODS

health. Containing no cholesterol mycoprotein can help to maintain healthy cholesterol levels and recent testing may suggest that it may even help to reduce LDL (Low-density Lipoprotein) cholesterol - which is known as bad cholesterol. Lowering this through swapping meats with Quorn can reduce the risk of Coronary heart disease, blood clots and strokes. Being high in

significantly less fat/calories/cholesterol in Quorn products



Microbes anyone? A Quorn Alternative

dietary fibre Quorn also helps you to meet your fibre daily allowance, which statistically most people don't meet, possibly also a result of the lack of fibre in meat and fish our usual source of protein. This is vital for our digestive system. Quorn is also low in sodium - too much of which can cause high blood pressure. Quorn has a low calorie content compared to meat and therefore eating it as an alternative helps you to lose weight. Recent studies also show that Quorn has a higher satiety compared to meat (keeps you fuller for longer) reducing the need for snacking and helping you to reduce daily calorie intake and maintain a healthy lifestyle.

- Source of Fibre
- Reduces Cholesterol
- Low in Calories
- Low in fat and Saturates
- Low in Sodium

Quorn products are an excellent substitute to meat not only due to their high nutritional value but because of their texture which resembles a meat like texture being of a similar structure to animal muscle cells. Eating mycoprotein products as

opposed to meat can have a significant benefit on your

For More Information Please Visit:

- <http://www.mycoprotein.org/>
- www.quorn.co.uk
- www.livestrong.com



Little things = Large impacts

IMPROVE THE QUALITY OF YOUR LIFE WITH:

Do **YOU** know about microbes? The Olympic Games are coming, and the athletes you will see competing will need to stay healthy and to do this, use food supplements. One example is Yeast Supplements. But not just athletes use them...

Microbes

Super food? Nutritional Yeast - Healthy living for athletes and vegans

Are you a vegan, or an athlete? Are you just a person who needs more vitamins, or is interested in microbes?

Nutritional yeast is yellow and has a nutty cheese flavour. It's grown on molasses. It's very popular with vegans as it provides a massive amount of protein so is often used as a substitute for cheese and many different types can be bought from supermarkets. It can be bought as tablets and capsules or as a food ingredient. It's commonly used as a topping for popcorn and pasta. As well as its popularity with vegans, it's also popular with athletes as the large protein quantities supplied help the growth of those ever important muscles!

However, there have been cautions for athletes taking protein supplements as too much can be unhealthy.

Actually, when used in the correct quantities (2 tablespoons a day) it provides 52% of the

Recommended Daily Allowance of proteins.

Due to its large amount of goodness, nutritional yeast is sometimes described as a super food but isn't to be confused with other types of yeast. (eg. Brewers Yeast)

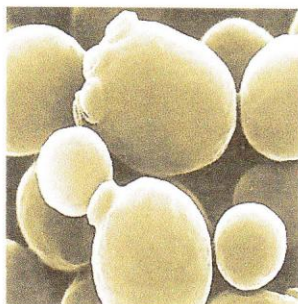
It's also high in fibre, (helping peristalsis which is the movement of food through the digestive system).

It's rich in a variety of minerals, including iron, magnesium, phosphorus and zinc. It consists of chromium which is great for dealing with low blood pressure and diabetes.

But as well as all of these great things that Nutritional Yeast has, let's go to the other end of the spectrum. It's low in saturated fat, cholesterol and sodium. Even better, for those who are celiacs, it is gluten-free, so can be taken by these people ensuring they are creating a healthy lifestyle for themselves. Some brands contain folic acid and other B vitamins. It is crucial that

we have enough B vitamins as, for example, folic acid has a lot of important bodily functions, such as, preventing us from anaemia and producing healthy red blood cells. B vitamins also help to manage stress levels, keep skin healthy and prevent cancer of the pancreas. Some types of nutritional yeast contain the vitamin B12, this gives it its yellow colour. When this occurs, the vitamin B12 is produced separately and then added. Nutritional yeast is one of the few non-animal sources of vitamin B12 which is why it is so important to vegans and vegetarians.

Nutritional yeast contains glutamic acid, which is an amino acid. (building block of proteins) This is a neurotransmitter, meaning it is a chemical messenger that carries signals between neurons (brain cells) and other cells in our bodies. It's therefore important in the metabolism of sugars and fats.



THE MICROBE

Believe it or not, this amazing substance is mainly produced from one microbe, *Saccharomyces cerevisiae* - one of the most useful types of yeast. It belongs to the Fungi kingdom (others are mushrooms) and is unicellular (one-celled). It's been naturally found on plants, insects and warm-blooded animals. Nutritional yeast is produced by culturing *Saccharomyces cerevisiae* with beet molasses and sugarcane for 7 days. It is then harvested, washed, pasteurized and dried. Wow, all of that goodness came from one miniscule thing that we can't see without a microscope!



Small but MIGHTY!

LACTOSE INTOLERANCE FEBRUARY 4TH



Good times with enzymes

When you sit down to a refreshing glass of milk or any other dairy product, do you begin to feel unwell or uncomfortable? This may well be due to your body's inability to digest lactose, which is the natural sugar present in milk. This can result in you becoming



lactose intolerant, and symptoms that may occur include nausea, cramps, abdominal bloating, gas or diarrhoea. These may last from thirty minutes to two hours based on the amount of lactose consumed and the amount a person can tolerate.

When we consume dairy products which contain lactose, the cells lining our small intestine produce a digestive enzyme known as lactase which is a glycoside hydrolase enzyme. Enzymes are biological catalysts, which means that they have the ability to speed up the reaction time in a chemical reaction. The enzyme's purpose is to break the lactose into two simpler forms of sugar called galactose and glucose. These are then absorbed into the blood stream. However, if there is an insufficient production of the enzyme lactase in the small intestine, humans become lactose intolerant, resulting in discomfort in the digestive tract upon indigestion of milk products.

Lactose intolerance is a common condition that is more likely to occur in adulthood, with a higher incidence in older adults. Some ethnic and racial populations are more affected than others,

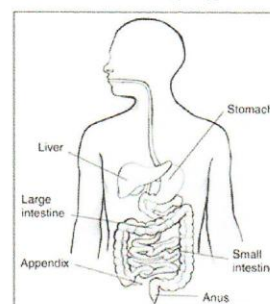
including African Americans, Hispanic Americans, American Indians, and Asian Americans. The condition is least common among Americans of northern European descent.

Infants born prematurely are more likely to have lactase deficiency because an infant's lactase levels do not increase until the third trimester of pregnancy.

Primary lactase deficiency develops over time and begins after about age 2 when the body begins to produce less lactase. Most children who have lactase deficiency do not experience symptoms of lactose intolerance until late adolescence or adulthood.

Secondary lactase deficiency results from injury to the small intestine that occurs with severe diarrheal illness, celiac disease, Crohn's disease, or chemotherapy. This type of lactase deficiency can occur at any age but is more common in infancy.

People who still experience symptoms after dietary changes can take lactase enzyme drops or tablets. Taking the tablets or a few drops of the liquid enzyme when consuming milk or milk products may make these foods more tolerable for people with



lactose intolerance.

Getting enough calcium is also important for people with lactose intolerance when the intake of milk and milk products is limited. Numerous other non-milk foods can provide calcium and other nutrients the body needs include fish with soft bones such as salmon and sardines and dark green vegetables such as spinach.

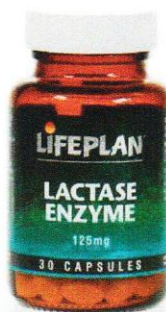
Keeping healthy with bacteria

Can you stay healthy by drinking milk then? The answer is yes. Several forms of friendly bacteria have been found that can relieve the effects of lactose intolerance.

So should our athletes be refueling with a glass of milk? This idea is ever more important with the Olympics looming upon us. It may be an idea for athletes to drink milk after exercise as it is a more effective way to offset dehydration in comparison to sports drinks or H₂O. One percent of dehydration can cause up to a fifteen percent decline in performance, with an augment-

ed heart rate, core temperature and less capability to sustain. More considerable dehydration goes together with an increased risk of heat-related infirmity such as heat stroke.

Milk is better than either a sports drink or water because it is a source of high quality protein, carbohydrates, calcium and electrolytes. Milk also replaces sodium lost in sweat and helps the body retain fluid better. Milk is a natural and effective post-exercise



recovery aid as it provides fluids, energy and electrolytes to speed up recovery from exercise fatigue. Though, these athletes will be adults, who are likely to produce less lactase enzyme so should we be supporting them, and providing them with tablets which they can drink with the milk?

However, a whole menagerie of bacteria, fungi, and other little critters have learned to live on lactose by making their own lactase. Some of these are the ones in our

intestines that help ease the problems of undigested lactose. Others are known as dairy yeasts, and have been used for centuries to make yogurt and other fermented dairy products. The lactase from one dairy yeast called *Kluyveromyces lactis* would get destroyed by the acidity in our stomach if we took it in pill form, but it proved to be perfect to add to milk. This is the lactase that is used in lactase drops. A fungus known as *Aspergillus oryzae*, though, creates a lactase that works best under high acidity, so manufacturers seized it for use in lactase pills.

**LEARN ABOUT
BAD MICROBES...**

MICROBES : PAGE 4

**BRITS FIZZLE IN
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BRITS : PAGE 12

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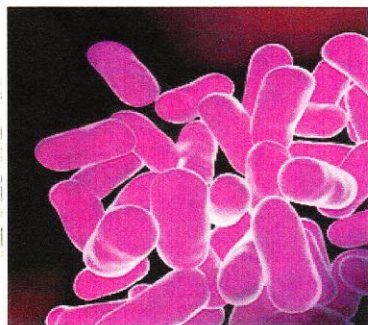
MICROBE

'SUPER MICROBES'

KEEP YOUR GUT HEALTHY

HELPFUL

OR



POINTLESS?

Are you healthy for the upcoming Olympic Games? Is your gut healthy? Yakult could be the answer. 100 trillion bacteria live in and on your body. Some are present on the surface of the skin and inside the mouth, nose and urogenital tract – but most live within your gut. Here the good bacteria can neutralise toxins, inhibit yeast and bad bacteria in the gut, whilst working to keep the gut healthy as well as beneficially influencing the immune system. The gut flora helps to neutralise some of the toxic by-products of digestion, reduce harmful substances (such as toxins and carcinogens), and discourage 'bad' bacteria and yeasts. It also helps to stimulate the digestive process and aid the absorption of nutrients, as well as producing vitamins including B and K. In addition, the by-products of the growth of beneficial

bacteria in the gut help regulate the growth of the gut cells and keep them healthy. Some of the better known types of 'good' bacteria include: Lactobacillus and Bifidobacterium. Some probiotic strains included in these groups are able to survive stomach acid to reach the intestines alive. Bifidobacteria are one of the first microbes to colonise the gut of breast-fed babies, helping to protect them from infection. The majority of the body's immune system is located within the digestive system. Straight after birth, the gut flora is important in training the immune system to recognise and fight harmful bacteria, thus helping to protect the body from disease. Remember, keep healthy, be happy.



Chapman C

C. Chapman
Editor in Chief - DAILY MICROBE

EYEWITNESS ACCOUNTS OF MURDEROUS MEERKAT : PAGES 5 - 6