

# Probiotic Bulletin

## AN UPDATE FOR HEALTHCARE PROFESSIONALS

### Probiotics & diverticular disease

Interview with  
Dr John Nichols,  
GP locum & researcher



**HB: What is the difference between diverticulosis, diverticulitis and diverticular disease?**

**JN:** There is some confusion between these terms. Diverticulosis is a condition where pin-sized pockets (known as diverticuli) develop in the large bowel due to a lack of fibre in the diet. Twenty percent of diverticulosis cases will progress to diverticulitis, which occurs when the diverticuli become infected. Diverticular disease encompasses everything; it is an umbrella term for anything that can happen after you develop diverticulosis.

**HB: What prompted you to research probiotics and diverticular disease?**

**JN:** During my MSc in nutritional medicine I attended a lecture on probiotics by a nutritionist; when asked about their use in diverticulitis, she was unable to give a clear answer. Diverticulitis has a low profile. Although it's often seen in GP practices, it rarely reaches hospitals unless it's a particularly nasty case.

**HB: Can you give us some background on your recent study?**

**JN:** Firstly I conducted an online questionnaire and discovered that 12% of 99 GPs said they frequently recommend probiotics when prescribing antibiotics for diverticulitis. However, when I reviewed the evidence for probiotics and diverticulitis, I found only two very small hospital trials that showed benefit, but nothing in general practice. I decided to get some retrospective data to investigate the advice given by GPs to their patients with diverticular disease.

I found my diverticulosis database by interrogating the electronic database at three GP practices in Surrey. There were 26,500 patients in the three surgeries, 565 of whom had experienced diverticular disease.

**HB: What were your main findings?**

**JN:** I received permission to send out questionnaires to 67% of 115 patients who had suffered from diverticulitis within the last five years. I found out that 15.6% had been advised to take a probiotic, which is consistent with the previous web survey. Nevertheless, there was quite a lot of variation between practices: in one,

32% of patients were recommended to take a probiotic, compared with 9.4% and 0% in the others. However, if you asked the patients themselves whether they were currently taking probiotics, it went up to 32.5%, and I found out that many had started taking probiotics of their own volition or on the advice of a friend. So what turned out to be significant was not the GPs' advice, but whether the patients were taking probiotics regularly at the time of the questionnaire.

Out of the patients who took a probiotic there was a trend for:

1. A reduction in the frequency of diverticulitis attacks,
2. A reduction in the number of bowel symptoms and
3. An increase in the number of weeks since the last attack.

Although none of these singly reached statistical significance it did show a trend which I think could be further investigated.

**HB: What are your recommendations for healthcare professionals advising patients with diverticular disease?**

**JN:** Clearly the earlier survey shows that 12% of GPs have already made up their own minds. They know that there is good evidence that if you give a probiotic with an antibiotic there will be fewer side effects. But they don't necessarily apply that with every single prescription of antibiotics. With diverticulitis the gut flora turns nasty and produces many pathogens; it's logical to soften the blow by giving the gut some probiotics and prebiotics to normalise the gut microbiota. However this hypothesis needs to be proven and research is clearly needed, but at the moment I would say you have nothing to lose and everything to gain by advising patients with diverticulitis to take probiotics.

More research is needed and I have discussed ideas with research colleagues. One area I think would be worth pursuing is to study the gut flora in a few patients with diverticulitis. I think it would be interesting to investigate because it could tell us quite a lot about the relationship between the gut flora and disease, not just diverticulitis.

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*Dr John Nichols studied medicine at the University of Liverpool and has worked in general practice for over 30 years. In 2005 he completed an MSc in nutritional medicine at the University of Surrey where he became interested in probiotics. This year at the Nutrition Society's Annual Summer Meeting, Dr Nichols presented some of his research in this area. Hannah Baker, science officer at Yakult UK caught up with him to find out more about this retrospective study examining probiotic advice given by GPs to patients with diverticular disease.*

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Professor Glenn Gibson



Professor Seppo Salminen

The British Nutrition Foundation (BNF) conference entitled 'Probiotics and health', held in London on 1<sup>st</sup> October, featured a collection of probiotic experts who reviewed the evidence for the use of probiotics in different health and disease states.

Following a welcome by Professor Judith Buttriss, the joint chairperson Professor Ian Rowland (University of Reading) began the day with an overview of probiotics, before introducing the first speaker, his colleague Professor Glenn Gibson. His talk gave an insight into the functional ecosystem of the gut, explaining the role probiotics can play in maintaining this. He then explained how prebiotics selectively stimulate the growth of beneficial species in the gut, giving particular emphasis to novel galacto-oligosaccharides (a group of prebiotics which are produced directly by the enzymatic activity of probiotic bacteria on lactose).

Professor Graham Rook (University College London) then examined the association between changes in the gut microbiota and alterations that have developed in our lifestyle. He explained the hypothesis that our increasing lack of exposure to common bacteria is related to the increased development of allergies. Furthermore disruption of the gut microbiota has been linked to the growing incidence of inflammatory bowel conditions.

An overview of the use of probiotics in preventing and alleviating infections in children was then presented by Professor Hania Szajewska (Medical University of Warsaw, Poland). She discussed the evidence behind the use of probiotics in cases of gastroenteritis, nosocomial diarrhoea and respiratory tract infections in young children. The morning session concluded with a presentation from Dr Mary Hickson, (Imperial College Healthcare) who summarised a study

investigating the effects of daily probiotic consumption in elderly patients on the incidence of *Clostridium difficile*-associated diarrhoea and antibiotic-associated diarrhoea. The study found a significantly lower incidence of both conditions in the group consuming the probiotic.

Professor Peter Whorwell (University of Manchester) began the afternoon session with the topic of probiotics and irritable bowel syndrome (IBS), emphasising both the complexity of the condition and the need for new management therapies. Recent research has shown that inflammation of the gut wall and disturbance of the gut microbiota both play a key role in IBS, which suggests possible mechanisms of action for probiotics.

The focus then moved towards inflammatory bowel diseases (IBD) such as Crohn's disease (CD) and ulcerative colitis (UC), as Dr Elisabeth Weichselbaum (a nutrition scientist at the BNF) provided an insight into the use of probiotics, both in maintaining remission and in treating active disease. The causes of IBD are not well understood and the evidence supporting the use of probiotics in IBD can be conflicting. Recent studies however suggest that some strains, particularly *E. coli* Nissle, may be effective in preventing recurrence of UC.

The afternoon session concluded with a focus on the efficacy, safety and health claims for probiotics, presented by Professor Seppo Salminen (University of Turku, Finland). Health claims in Europe require full documentation of the strain properties complemented with human studies using the probiotic product in target populations.

The conference ended with an open discussion between delegates and speakers, encouraging a wealth of interesting and thought-provoking questions.

# British Nutrition Foundation conference Probiotics and health – summing up the evidence

Kaman Lee  
& Helen Stevenson,  
Yakult UK (Science)





The British Ambassador to Vietnam, HE Mark Kent delivering the opening speech



The lecturers at the reception held at the Ambassador's residence, Hanoi

# 2009 DeIPHE workshop in infectious diseases

Prof Simon Cutting,  
Royal Holloway,  
University of London

August 10–14  
Hanoi, Vietnam



In August this year, a workshop on infectious disease was held at the National Institute of Hygiene and Epidemiology (NIHE) in Hanoi, Vietnam. This was the 15<sup>th</sup> in a series of workshops organised in Vietnam for the purpose of helping to train young scientists by introducing them to western scientists whose research covers infectious disease. NIHE, formerly one of four Pasteur Institutes in Vietnam, is the primary centre for disease surveillance, epidemiology and infectious disease research and has a large number of collaborations with other countries especially in the areas of influenza, HIV and cholera. It is also the site of Vabiotech, a manufacturer of vaccines for distribution in Vietnam.

This year the workshop brought in a number of overseas speakers who covered influenza, SARS (severe acute respiratory syndrome), dengue and HIV (the latter by a UK speaker: Dr Tom Hanke, Weatherall Institute of Molecular Medicine). Vaccine development was a theme this year, and included a talk by myself. The topic of bacterial diseases included talks on tuberculosis, neglected infectious diseases, and enterotoxigenic *Escherichia coli* (this last talk by another UK speaker: Dr Ian Henderson, University of Birmingham).

A number of speakers from Vietnam also participated, including Dr Ngo Thi Hoa, who obtained her PhD in the UK, spent a further three years at Yale University on a Wellcome Trust International Fellowship and is now at the Oxford University Clinical Research Unit in Ho Chi Minh City. In a one day session the relatively new area of nanotechnology was also introduced, with speakers from Vietnam and several European countries.

In total 120 students at MSc level or higher registered for the workshop and the course has enabled a number of younger scientists to meet and interact with foreign researchers. In turn, this will hopefully stimulate future collaborations including Vietnamese scientists choosing to study in Europe, as well as potential research collaborations. It is worth mentioning that Vabiotech is the first Vietnamese recipient of a research project grant (INNOVAC) from the EU 6<sup>th</sup> Framework. The workshop was opened by His Excellency Mark Kent, British Ambassador to Vietnam and a reception was held at his residence on the first night for speakers. The organisers of the workshop would also like to give thanks for the generous support of its sponsors including DFID (UK Department for International Development), Yakult UK Ltd, Into Action (a Jordanian charity created by the philanthropist Mr Yazan Mufti) and the Society for General Microbiology, UK.



## Research round-up

### Probiotics and digestive health (Guyonnet *et al* 2009)

The beneficial effects of probiotics on gastrointestinal (GI) wellbeing and digestive symptoms have been repeatedly demonstrated in populations suffering from irritable bowel syndrome (IBS), yet few studies have replicated these effects in healthy populations. The study by Guyonnet *et al* (2009) aimed to analyse the effects of daily consumption of a probiotic yogurt containing *Bifidobacterium lactis* DN-173 010 on GI wellbeing, digestive symptoms and health-related quality of life (HRQoL) among healthy female adults.

This double-blind, randomised, placebo-controlled trial recruited 197 women without any diagnosed digestive disease, who were between 18 and 60 years old and with a BMI of 18–30 kg/m<sup>2</sup>. Subjects were closely matched and divided into control and test cohorts. The ten week trial period comprised of a two week stabilisation, four

week intervention and four week wash-out period. During the intervention period, the test cohort consumed 2 x 125g of probiotic product and the control cohort consumed the placebo (a non-fermented milk-based product). GI wellbeing, digestive symptoms and HRQoL were assessed periodically through self-evaluation.

The results showed a significant improvement in GI well-being ( $P=0.006$ ) and digestive symptoms ( $P=0.041$ ) in the test cohort compared to the control cohort and HRQoL score was significantly higher ( $P=0.027$ ) in the test group at the end of the intervention compared with the control group. The authors concluded that the data illustrated the ability of the probiotic to improve GI wellbeing and symptoms in adult women with no diagnosed digestive diseases.

- Guyonnet D, Schlumberger A, Mhamdi L, Jakob S & Hassany O (2009) Fermented milk containing *Bifidobacterium lactis* DN-173 010 improves gastrointestinal well-being and digestive symptoms in women reporting minor digestive symptoms: a randomised, double-blind, parallel, controlled study. *British Journal of Nutrition* 22: 1–9.

### Probiotics and oral health (Staab *et al* 2009)

A recent study investigated the effect of a probiotic milk drink containing *Lactobacillus casei* Shirota on gingivitis. This was a pilot study with 50 volunteers who drank the probiotic drink daily for eight weeks. The results showed that elastase activity, (a marker of inflammation – usually increased during gingivitis) and matrix metalloproteinase-3 amount (the activities of which are increased during inflammation) were significantly lower after probiotic ingestion ( $P<0.001$  and 0.016 respectively).

The control group also had a significantly higher ( $P=0.014$ ) myeloperoxidase (MPO) activity than the probiotic group at the end of the test period. MPO is also a marker of inflammation. However no significant differences were seen for interproximal plaque index and papillary bleeding between the groups. The results from this pilot study suggest probiotics may reduce the risk of gingival inflammation.

- Staab B, Eick S, Knöfler G & Jentsch H (2009) The influence of a probiotic milk drink on the development of gingivitis: a pilot study. *Journal of Clinical Periodontology* 36: 850–856. doi: 10.1111/j.1600-051X.2009.01459.x.

### Probiotics and *C. difficile* diarrhoea (Lewis *et al* 2009)

This recent review discusses the use of probiotics in reducing the risk of *C. difficile*-associated diarrhoea. The paper concentrates on fermented milk products and summarises recent trials in which they have been used. Full detail on a UK hospital case study is given, where a probiotic drink was successfully used as part of their infection control strategy resulting in a reduction in the incidence of *C. difficile* diarrhoea at the

hospital. The paper concludes that although the body of probiotic evidence for *C. difficile* diarrhoea is growing, there is a need for larger, well-controlled trials. However, it seems that probiotics may play a role in an infection control strategy and particular attention should be given to the elderly, who are likely to have many age-related changes in the gut.

- Lewis JDN, Thomas LV & Weir W (2009) The potential of probiotic fermented milk products in reducing risk of antibiotic-associated diarrhoea and *Clostridium difficile* disease. *International Journal of Dairy Technology* 62: doi: 10.1111/j.1471-0307.2009.00518.

# Yakult awards

## University of Chester

At the University's annual Valedictory and prize-giving ceremony, Amy Jones was awarded the 2009 Yakult award for achievement in nutrition profession programmes. Amy is pictured here with Dr Basma Ellahi (right), Head of Biological Sciences. Amy, who completed her BSc in Human Nutrition earlier this year, was nominated for the award because of her pro-active approach to the course and for her final dissertation project which focused on developing links with local schools in Warrington. Her project investigated the multiple bone health risk factors applicable to adolescents and has since been used to inform local school policies.



Amy Jones & Dr Basma Ellahi



Gemma Darby & Dr Ian Davies

## Liverpool John Moores University

Gemma Darby has been presented with the 2009 Yakult award for best academic achievement in her final year of the Nutrition BSc course at Liverpool John Moores University. Gemma received a first class degree and is now looking forward to starting a PhD in nutritional medicine at the University of Manchester with the hope of following a career in research and lecturing.

## The Burdett Institute of Gastrointestinal Nursing, King's College London

For the second year running, Yakult has sponsored a prize for the best nutrition-related project at the Burdett Institute of Gastrointestinal Nursing. This year the prize was awarded to Frances Allen, a senior specialist dietitian, who submitted a project which investigated the use and management of a new method of enteral feeding known as fistuloclysis. Frances received exceptional marks for the project, which has been submitted for publication.



Frances Allen



Anne Edwards

## University of Surrey

Anne Edwards studied Nutritional Medicine at the University of Surrey and was the only student to receive a distinction in the final year results. She was awarded the 2009 Yakult Award for outstanding achievement and highest overall mark in the Nutritional Medicine MSc programme.

# Science team notice board

## Seasons Greetings



The science team at Yakult UK would like to wish all of its readers a Merry Christmas and a Happy New Year.

## Diary Date: 2010 Yakult UK Symposium

The next Yakult UK Symposium will be held in London on 12<sup>th</sup> October 2010; more details will follow in future issues of the Probiotic Bulletin.



*Speakers from the 2006 Yakult UK Symposium*

## How can we support you?

- Probiotic literature
- Free supply of Yakult for limited trial period
- Probiotic Bulletin newsletter
- Educational talks by our team of nutritionists
- Advice on probiotics
- Dedicated website for healthcare professionals, [www.yakult.co.uk/hcp](http://www.yakult.co.uk/hcp)

## Pass it on

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## Contact us

If you have any questions about probiotics, please don't hesitate to get in touch.

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