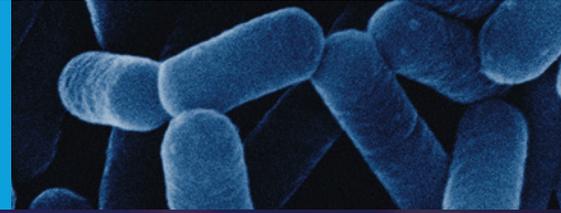


Probiotic Bulletin

A Newsletter for Healthcare Professionals



Survival through the gut: a key probiotic characteristic

Probiotics are: 'Live microorganisms that, when administered in adequate amounts, confer a health benefit on the host'¹. All the words in this definition are important, starting with the first word - 'live'. Dead microorganisms are not probiotic. But another nuance to 'live' should be considered: bioavailability in the body.

In this issue:

- | | |
|---|-----|
| • Probiotic survival | 1-2 |
| • Probiotics and ventilator-associated pneumonia | 3 |
| • Probiotics and hospital patients with diarrhoea | 4 |
| • Probiotics and nursing home residents | |
| • Community Nutrition HCP Award | 5 |
| • Student awards | |
| • The Gut Microbiota for Health Expert Panel | |
| • Antibiotic exposure and type 2 diabetes | 6 |
| • Breast cancer prevention and probiotics | |
| • Microbes in space | |
| • Cancer-detecting probiotics | |
| • New research papers | 7 |
| • Yakult Study Day 2016 | 8 |
| • Probiotic health claim in Switzerland | |
| • Love Your Gut | |

A key aspect of oral probiotics is that they remain alive through the gastrointestinal (GI) tract to reach the intended site of action (usually the small and/or large intestines).

When searching for new probiotics, collections may be tested for several desirable characteristics, such as antimicrobial activity, bile salt hydrolase activity, antibiotic resistance, immune modulation and adhesion.² Strains are also screened for the ability to survive in conditions simulating the human gut such as resistance to acidity, pepsin, pancreatin, lipase and/or bile salts.³ *In vitro* tests or gut models are commonly used for these screens but *in vivo* tests are still needed to demonstrate gut survival and efficacy.

‘The proof of the pudding is in the eating’. Conclusive evidence of gut survival can only come from human intervention studies: the probiotics are fed to human volunteers, after which the live cells should be detected in their faeces. Probiotics are transient colonisers of the gut, so usually strains can no longer be detected up to two weeks after intervention ceases. Many probiotics belong to lactobacilli or bifidobacteria species, which often have an intrinsic ability to survive the harsh conditions of the upper GI tract. Yogurt starter cultures may not have this ability, however, as was shown in a study where over one hundred young adults ate commercially prepared fresh yogurt for 15 days. Culture and non-culture methods failed to detect the two starter cultures (*Lactobacillus delbrueckii* and *Streptococcus thermophilus*) in the volunteers’ faeces.⁴

Probiotic manufacturers should be able to provide a list of human studies showing gut survival, and this is certainly true for Yakult. The ability of *Lactobacillus casei* Shirota to survive the gut has been tested in numerous human studies (contact science@yakult.co.uk for a list). For example, a study published this year from a research group in China found that, during a 14-day ingestion period of the probiotic (as Yakult), the strain could be recovered from faeces at a level of Log_{10} 6.86-7.17 CFU/g of faeces.⁵ This is similar to levels found in other studies, for example, in Japan, Thailand, the UK, Belgium and the Netherlands.⁶⁻¹²

However, faecal analysis does not indicate how many of the bacteria survive and/or grow within the different parts of the GI tract. The number of bacteria detected in faeces is a consequence of how many cells were ingested, how many died in transit, and the growth of surviving cells in the GI tract. Small changes in the faecal microbiome associated with ingested bacteria may not reflect larger changes higher in the GI tract. Invasive techniques are necessary to investigate this so such studies are not common.¹³ A study in 1993 with a mix of lactobacilli given to healthy volunteers found an increase in lactobacilli counts in jejunal and rectal biopsies; the strains were still detected 11 days after ingestion ceased.¹⁴ A more recent study, which investigated the *in vivo* mucosal transcriptome responses to three lactobacilli, took biopsies from the duodenum of healthy volunteers, six hours after they ingested the probiotics.¹⁵ This revealed strain-specific induction of different gene-regulatory pathways and networks, many of which were similar to bioactive molecules and drugs, and had therapeutic potential. This study provided direct evidence of the immunomodulatory effects of probiotics within the small intestine.

Dead microorganisms may have some immune-modulatory effects but studies with *L. casei* Shirota have shown that immune effects are much stronger with live bacteria.¹⁶ Interestingly, *L. casei* Shirota was originally selected for its ability to tolerate gastric and bile acids and digestive enzymes, but this study indicated that its immune-modulatory ability is influenced by its rigid cell wall, that is resistant to digestion.

Healthcare professionals are advised to check that any probiotics they are thinking of recommending can survive passage through the gut. Human studies are the only clear proof of this, not laboratory tests.

A list of references is available at www.yakult.co.uk/hcp or from science@yakult.co.uk

The International Probiotics Association (IPA) Europe

On 30th September in Brussels, this consortium of probiotic companies was launched with a panel discussion on the theme: *Towards a clear status for probiotics in Europe*. Taking part were representatives from the European Food Safety Authority (Valerie Curtui, Head of Nutrition Unit), the European Commission (Alexandra Nikolakopoulou, Head of Unit Food Composition & Information, DG Santé), the European Parliament (Irish MEP Marian Harkin), academia (Professor Lorenzo Morelli, the Catholic University of the Sacred Heart, Milan) and industry (Dr Bart Degeest, Yakult Belgium).

The group has already published guidelines for conditions of use of the term ‘probiotic’ in commercial communications about foods, beverages and supplements. These focussed on the need for probiotic strain characterisation, safety and ability to be alive, as well as emphasising that claims of gut survival must be supported by human trials. (www.ipaeurope.org/).

Did you know...

- Probiotics were mainly introduced into the UK in the mid-1990s’
- There are 10 times more bacteria in our body than cells
- It would be almost impossible to measure exactly how many bacteria exist in the world, but one scientific paper has set an estimate at five nonillion (ie, 5×10^{30}).¹⁷
- The appendix is thought to play an important and beneficial role in the storage of bacteria¹⁸
- Alexander Fleming, who discovered penicillin, warned about the risk of antibiotic-resistant bacteria developing due to antibiotic misuse



Probiotics and ventilator-associated pneumonia (VAP)

Rongrungruang MD et al (2015) Randomized controlled study of probiotics containing *Lactobacillus casei* (Shirota strain) for prevention of ventilator-associated pneumonia. *J Med Assoc Thai* 98(3):253-259. <http://www.ncbi.nlm.nih.gov/pubmed/25920295>

Ventilator-associated pneumonia (VAP) is the most common nosocomial complication observed in intensive care. It is linked to increased length of stay in hospital, increased healthcare costs and increased mortality. Mechanical ventilation not only disrupts the commensal microbiota of the oral cavity and upper airway, but also introduces opportunistic pathogens into the lungs, because such bacteria can survive in biofilms on the endotracheal tubes.

To investigate a potential strategy to prevent VAP, a prospective, randomised, open-label, controlled study was conducted between 2011 and 2013, in mechanically ventilated patients (n=150) at a tertiary care facility in Siriraj Hospital, Bangkok. None of the patients had VAP at baseline. They all received 2% chlorhexidine orally four times a day and standard VAP-preventive nursing care. Half of the patients also were given a daily fermented dairy drink containing 8×10^9 CFU of *Lactobacillus casei* Shirota (LcS) as well as a further 80ml dose via an enteral tube once daily for 28 days or until their endotracheal tubes were removed. The control patients did not receive any probiotic. Results are shown below:

Parameter	Probiotic group	Control group	P
VAP	24.0%	29.3%	0.46
VAP incidence /1,000 ventilator days	22.64	30.22	0.37
Mortality at day 28	24%	22.7%	0.86
Mortality at day 90	33.3%	34.7%	0.86

None of the above parameters showed significant changes, but there was a general trend for fewer episodes of VAP observed in the probiotic group compared to the control group. There was also a trend for lower prevalence of certain antibiotic-resistant bacteria isolated with oropharyngeal swabs. The rates of colonisation with antibiotic-resistant bacteria from these and rectal swabs were not significantly different, when comparing within the groups and between the groups. No significant difference was observed between the two groups with regard to the length of stay in the hospital or ICU.

Although these data suggest a possible positive effect of LcS for VAP incidence, larger studies are needed to confirm this.

Probiotic influence on bowel habits and renal function, in hospitalised patients with acute gastroenteritis

Akoglu et al (2015) Probiotic *Lactobacillus casei* Shirota improves kidney function, inflammation and bowel movements in hospitalized patients with acute gastroenteritis – A prospective study. *Journal of Functional Foods* 17:305-313. <http://www.sciencedirect.com/science/article/pii/S1756464615002595>

Acute gastroenteritis is a major health problem in hospitals across the world, with *Clostridium difficile* and antibiotic use being examples of contributory factors. Probiotics, which are known to reduce the duration of diarrhoea episodes, are a tactic that could be investigated for nosocomial diarrhoea.

This was a single centre, open-label, prospective and investigator-initiated study that investigated the effects of a probiotic (Yakult) containing *Lactobacillus casei* Shirota (LcS) on hospital patients (n=142) suffering acute gastroenteritis. The patients were divided into treatment (n=100) and control (n=42) groups; the treatment group received the probiotic twice daily and the control group did not receive any probiotic. Both groups had a similar diet of hospital food.



Compared to the control group, the LcS group showed significantly improved bowel function, evident as a greater reduction of the daily average (-5.42 vs -4.40) and cumulative bowel movements (-32.49 vs -26.43), particularly over the first three days.

Furthermore, patients with acute renal failure in the probiotic group showed significantly improved kidney function, which was seen as an increase in their glomerular filtration rate after 24 hours (41.9 ± 2.8 vs. 25.9 ± 4.2 ml/min, $P < 0.01$). No change in this function was observed in patients who did not have acute renal failure.

C-reactive protein and leukocyte counts were used to assess inflammation and possible probiotic immunomodulatory effects. In patients taking antibiotics, probiotic use was associated with a significant decrease in C-reactive protein levels on days five, six and seven; this was only observed on day seven for the control group. As expected, antibiotic use was associated with a decrease in leukocyte counts but this change was significant only in the probiotic group, on day three.

This study indicates the probiotic drink containing the strain LcS had positive effects with regard to bowel movements, kidney function and inflammation in hospitalised patients with acute gastroenteritis. The researchers suggested this probiotic might be considered for 'patients with acute gastroenteritis who present with high inflammation markers and/or impaired kidney function'.

Study in frail older people living in a nursing home

Van den Nieuwboer M et al (2015) Improving the bowel habits of elderly residents in a nursing home using probiotic fermented milk. *Beneficial Microbes* 6(4): 397-403. <http://www.ncbi.nlm.nih.gov/pubmed/25691101>

The effects of probiotic intervention (one daily bottle of the *Lactobacillus casei* Shirota fermented milk drink Yakult) on bowel function were investigated in a Dutch nursing home. During the trial, nursing staff recorded the number of bowel movements of the volunteers as well as the consistency of their stools by means of the 7-point Bristol Stool Scale. Data from the period three weeks before probiotic intervention were compared with data from the six-week period of probiotic intervention. Analysis of results from 44 compliant subjects (74 to 99 years of age) showed the probiotic was associated with improved bowel habits as seen by an increase in the percentage of ideal stool types per week ($P < 0.01$), and a decrease in constipation-type stools ($P < 0.01$) and diarrhoea-type stools ($P < 0.016$). There was no change in defecation frequency, laxative use or adverse events associated with the probiotic.





Community Nutrition Professional of the Year award 2015

A Yakult sponsored award

We are delighted to announce that the PAAT (Prevent, Anticipate and Avoid, Treat) Project Team from South Eastern Trust, Northern Ireland were this year's winners. Their dedicated team has worked hard to ensure that the correct nutritional strategies are in place for care home residents who are (or are at risk of being) malnourished. The award is well deserved for a team that is highlighting such an important area within care homes.

Yakult Student Awards 2015

Every year, Yakult is proud to sponsor a variety of academic and professional awards across the UK. In 2015, the company sponsored 13 awards, of which nine were in universities. Yakult would like to congratulate all of the students who won the Yakult Award this year and share a few of the happy winners with you.



Daisy Staff studied at Liverpool John Moores University, where she gained a First Class degree in Biochemistry BSc (Hons). Daisy won the Yakult Award for Academic Achievement in Xenobiotics this year, and thanked Liverpool John Moores University for this, and Yakult for recognising her achievements.



Chantelle Bartlett studied at Nottingham Trent University and received the Yakult Award for the Best Final Year Project in Microbial Physiology & Genomics. Chantelle's project involved assembling and annotating the genome sequence of a multi-drug resistant *Klebsiella pneumoniae* isolate.



Alex Mullins studied Microbiology BSc (Hons) at Cardiff University and was awarded the Yakult Award for attaining the highest score for a final year microbiology research project.



Polina Hadjikyriacou studied for a Nutritional Sciences MSc at the University of Surrey after completing an undergraduate course in Nutrition and Dietetics. Polina was awarded the Yakult Award for the Highest Overall Mark on the Nutritional Sciences MSc Programme.

The Gut Microbiota for Health Expert Panel

A British Society of Gastroenterology (BSG) group

<http://www.bsg.org.uk/research/gut-microbiota-expert-panel/index.html>

This cross disciplinary education and interest group was set up to help increase awareness and understanding among UK clinicians of the gut microbiota and its impact on health. The group aims to be the go-to source for defining what is known in this field, and to drive scientific and academic interest with regard to gastrointestinal and liver disease. Having already produced an article for the general public about the gut microbiota¹, the group recently published a major open access scientific review on the gut microbiota and gut disorders.² A similar review but aimed at primary care healthcare professionals is in preparation.

The group also recently organised a BSG research workshop in London, 'Faecal Microbiota Transplantation: Bench, Bedside, Courtroom?' that brought together clinicians with experience of using FMT with interested researchers and regulators for discussions on its safety, benefit and governance. Benjamin Mullish (ICL) kicked off the day by describing his experience of setting up an FMT service at St Mary's Hospital - remarking on the irony of treating patients suffering a disease caused by antibiotics (recurrent *Clostridium difficile*) in the same hospital where Fleming discovered penicillin in 1928. Emma Allen-Vercoe (University of Guelph) gave a microbial ecologist's viewpoint on the effectiveness of FMT for *C. difficile* and ulcerative colitis, and explained how her group was developing a synthetic microbial

ecosystem therapeutic (MET) treatment comprising rigorously screened stools from selected donors. Other FMT applications discussed included metabolic syndrome (Max Nieuwdorp, Academic Medical Centre, Amsterdam); rheumatology (Claudia Mauri, UCL); the gut-brain axis (Siobhain O'Mahony, University College Cork) and ageing (Paul O'Toole, UCC). A piece of advice that emerged was to avoid stools from near-family members and healthcare professionals. The first are likely to have similar diet and environmental exposures as the patient, which may promote the same unhealthy gut microbiota; the second have a higher risk of carrying antibiotic-resistant microorganisms due to their increased exposure in their working environment.

Finally there was discussion of the current UK regulatory framework, led by Victoria McKune and Peter Hawkey (PHE Birmingham) with input from representatives of the Medicines & Healthcare products Regulatory Agency.

1 'The Ecologist will see you now' by Claire Ainsworth.
For print or e-copies contact science@yakult.co.uk

2 Marchesi JR et al (2015) The gut microbiota and host health: a new clinical frontier. *Gut* Sep 2. [open access; Epub ahead of print]

Antibiotic exposure and type 2 diabetes

Mikkelsen KH *et al* (2015) Use of antibiotics and risk of type 2 diabetes: A population-based case-control study. *J Clin Endocrinol Metab* 100(10):3633-40. <http://www.ncbi.nlm.nih.gov/pubmed/26312581>

Antibiotics can disrupt the gut microbiota, and abnormal differences in the composition of the gut microbiota and its functions have also been linked to several metabolic diseases, including obesity and type 2 diabetes (Qin *et al*, 2012; Karlsson *et al*, 2013). To investigate whether antibiotic use was linked to development of type 2 diabetes, researchers in Denmark conducted a population-based case-control study analysing data acquired from three national registers over a period of twelve years.

Patients who developed type 2 diabetes had redeemed an annual average of 0.8 antibiotic prescriptions compared to 0.5 for those who did not develop the disease. The increased risk of developing type 2 diabetes if exposed to any type of antibiotic was calculated as an odds ratio (OR) of 1.53 (95% confidence

interval 1.50,1.55). Comparison of data from patients redeeming 0-1 prescriptions to those redeeming ≥ 5 , showed there was an increase in disease risk linked to greater antibiotic exposure. No specific group of antibiotics was significantly associated with type 2 diabetes but there was a slightly higher risk with narrow-spectrum or bactericidal types of antibiotics (OR 1.31 and 1.39, respectively).

Although a link between disease and antibiotic use was clearly shown, this could be due to patients with undiagnosed type 2 diabetes being more susceptible to infection and thus more likely to be prescribed antibiotics. An alternative, but likely, explanation, could also be that the increased risk of type 2 diabetes is linked to antibiotic-induced gut dysbiosis.

New bacterial frontiers

Microbiomes in space – the samples have landed!

The first sets of samples from an astronaut on the International Space Station have returned to Earth. These are part of NASA's Twins Study, a project which is investigating the effects of extended periods in space on the human microbiome. A wide range of samples was collected: faeces, saliva, blood and perspiration. In parallel, samples were collected from the astronaut's identical twin who remained on Earth. This analysis will further our understanding of the effects of microgravity, environment, diet, and stress on the microbiome and immune system, in order to help prepare astronauts for long journeys, such as to Mars.

Programming bacteria to look for tumours

Danino T *et al* (2015) Programmable probiotics for detection of cancer in urine. *Sci Transl Med* 7(289):289RA84. <http://www.ncbi.nlm.nih.gov/pubmed/26019220>

At a TED (Technology, Entertainment and Design) conference in Vancouver this year, a TED Fellow from Massachusetts Institute of Technology described how his group were using bacteria to detect tumours, and hoping one day even to treat them. The probiotic strain *Escherichia coli* Nissle 1917 was genetically modified to carry genes for the β -galactosidase enzyme. When this strain was fed to mice, it travelled from the gut to the liver, where it stayed and colonised a tumour. (Tumours often harbour high numbers of bacteria.) The mice were then fed a compound containing galactose and luciferin that, when it reached the liver tumour, was metabolised by the *E. coli* to release the luciferin. This light-emitting compound was then excreted in the urine, where it could easily be detected. It remains to be seen whether this will work in humans, but liver tumours are often hard to detect so this successful study offers hope for better diagnosis and possible treatment.

Breast cancer prevention review

Takagi A *et al* (2015) Possibility of breast cancer prevention: use of soy isoflavones and fermented soy beverage produced using probiotics. *Int J Mol Sci* 16(5):10907-10920. <http://www.ncbi.nlm.nih.gov/pubmed/25984609>

Breast cancer is the most prevalent malignancy among women worldwide (Anderson & Jakesz, 2008). Numerous studies have linked soya bean consumption to reduced risk of breast cancer (Nagata *et al*, 2014; Fritz *et al*, 2013; Shu *et al*, 2009; Yamori 2006). Soya beans contain isoflavones that, due to their anti-oestrogenic effects, have been extensively investigated for preventive effects against oestrogen-dependent breast cancer, the most common type of this disease.

This review describes fermented soya milk products containing probiotic strains, in particular their organoleptic characteristics and the absorption efficiency of their isoflavone content. An epidemiological study and a non-clinical study investigating the effects of a fermented soya milk beverage on breast cancer development are also discussed. While acknowledging that so far there are insufficient studies to make any firm conclusions, the review highlights the potential of fermented soya milk beverages with probiotics for breast cancer prevention.

Reference list can be found at www.yakult.co.uk/hcp/newsletter or from science@yakult.co.uk

Yakult on the big screen...
Can you spot Yakult
in the new Ant-Man film?



Sorry no prizes, but eagle-eyed viewers are invited to look out for some perfect probiotic product placement in this Marvel movie. This miniature superhero has also been used in Yakult adverts in Japan, USA, Australia and Hong Kong.

Recent publications of interest, including *Lactobacillus casei* Shirota (LcS) studies

Studies by Yakult scientists

Bifidobacterium bifidum YIT 10347 studies: gastrointestinal symptoms

In a trial of 305 people, two weeks' consumption of a fermented milk product significantly decreased prevalence of gastric and lower abdominal symptoms. In another smaller trial, the probiotic was associated with significant decrease in average symptom score per subject.

Another study in 37 patients with chronic functional gastrointestinal disorders found that four weeks' consumption of the same probiotic significantly improved patients' scores for abdominal pain, diarrhoea and constipation as well as frequency of acid-related dyspepsia. There were also some positive indications for psychological stress.

Gomi A et al (2015) <http://www.ncbi.nlm.nih.gov/pubmed/25648808>, *J Dairy Sci* 98:2277-2283;

Urita Y et al (2015) <http://www.ncbi.nlm.nih.gov/pubmed/25918671> *Biosci Micro Food Health* 34(2):37-44.

Gut microbiota analyses

The faecal microbiota of 303 children in five countries in Asia was analysed. Two microbial profiles were identified: a *Prevotella*-driven enterotype found mainly in Indonesia and Khon Kaen in Thailand, and a *Bifidobacterium/Bacteroides* enterotype found mainly in China, Japan and Taiwan. Metagenomic analysis predicted enterotype-related differences in carbohydrate digestion and bile acid biosynthesis. Children in Japan had a less diverse microbiota with high abundance of *Bifidobacterium* and fewer pathogens.

A sensitive RT-qPCR method and new primer sets were used to analyse the *Clostridium coccoides* group in faecal samples from 96 people of different ages. The *C. coccoides* group was present in lower numbers in older people. *Blautia* was the most common subgroup in all ages, with *Fusicatenibacter saccharivorans* and *Dorea* higher in adults compared to young children or older people. Two species that produce secondary bile acids in the gut were more common in older people compared to younger.

Nakayama J et al (2015) <http://www.ncbi.nlm.nih.gov/pubmed/25703686>, *Scientific Reports* 5:8397;

Kurakawa T et al (2015) <http://www.ncbi.nlm.nih.gov/pubmed/26000453>, *PLoS One* 10(5):e0126226

Developing new oral probiotics

As a result of a screen of oral isolates of lactobacilli and streptococci from healthy people, four promising candidates were identified: *Lactobacillus crispatus* YIT 12319, *Lactobacillus fermentum* YIT 12320, *Lactobacillus gasseri* YIT 12321 and *Streptococcus mitis* YIT 12322. Their selection was based on safety tests, lack of production of volatile sulphur compound or water-insoluble glucan, antibacterial activity against periodontitis strains and *in vitro* adherence tests.

Terai T et al (2015) <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0128657>, *PLoS One* 10(6): e0128657

Probiotic reviews and meta-analyses

Liver transplantation

This meta-analysis identified four controlled studies (n=246) where probiotics were used with prebiotics. It calculated an infection rate of 7% in patients receiving probiotics compared to 35% in the control groups (RR 0.21; 95% CI 0.11-0.41, P=0.001). The number needed to treat to prevent one infection was 3.6. Probiotic benefits included prevention of urinary tract infection and shorter duration of hospital stay, ICU stay or antibiotic usage.

Sawas T et al (2015) <http://www.ncbi.nlm.nih.gov/pubmed/26044318>, *Clin Gastroenterol Hepatol* 13(9):1567-1574

Glycaemic control

The study identified 17 randomised controlled trials that compared probiotic with placebo effects on fasting blood glucose, fasting plasma insulin or a homeostasis model of assessing insulin resistance. When the results were pooled, significant positive effects were found for all three parameters leading to the conclusion of a moderate benefit for probiotics with regard to glycaemic control.

Ruan Y et al (2015) <http://www.ncbi.nlm.nih.gov/pubmed/26161741>, *PLoS One* 10(7):e0132121

Lipid-lowering and risk factors associated with cardiovascular disease (CVD)

This meta-analysis identified 15 studies with 788 subjects. Statistically significant effects were found for probiotics in relation to total cholesterol and low-density lipoprotein (particularly for fermented dairy probiotics), body mass index, waist circumference and inflammation biomarkers.

Sun J & Buys N (2015) <http://www.ncbi.nlm.nih.gov/pubmed/26340330>, *Ann Med* 47(6):430-40]

Immune effects

This paper gives an overview of human and mechanistic studies for strains used in probiotic fermented milk products. One of the more consistent findings in human studies is the enhancement of natural killer cell activity by probiotics, particularly lactobacilli.

Santiago-Lopez L et al (2015) <http://onlinelibrary.wiley.com/doi/10.1111/1471-0307.12202/abstract>, *Int J Dairy Technol* 68:153-165.

Save the date! Thursday 20th October 2016

This is when we will be hosting our study day next year at BMA House in central London. Please contact us (science@yakult.co.uk) to register your interest for this popular event, and do let us know of any topics you would like covered.

Stop press! Approval of a Yakult health claim in Switzerland

After assessment of a dossier of supporting scientific evidence, the Swiss Federal Food Safety and Veterinary Office recently approved use of the following statement: **'Yakult contributes to the normal functioning of the intestine by improving stool consistency and reducing transit time'**.



What's the buzz about 'probeeotics'?

It is not fully understood why there is such a worrying decline in bee populations but the widespread use of pesticides, in particular neonicotinoids, is suspected to be partially responsible. A team of young scientists at the University of British Columbia is attempting to tackle the problem by developing a probiotic from novel species isolated from the gut of honey bees: *Snodgrassella alvi* and *Giamella apicola*. They hope to engineer a *G. apicola* strain so that it can break down neonicotinoids; the bees could ingest the strains from sugar solutions kept near hives.

Love Your Gut

This year marks the 17th anniversary of Gut Week and we were delighted to welcome some new charity partners on board to support this national public health awareness campaign. The Love Your Gut campaign runs all year and we offer free campaign packs for healthcare professionals to run awareness events for patients. Visit www.loveyourgut.com/hcp, email info@loveyourgut.com or call 020 8842 7600. The packs contain leaflets, posters and other material to help promote the importance of gut health to patients.



Core, one of the founding members of Gut Week, funds medical research into the prevention, cure and treatment of digestive disorders, and provides information for patients and sufferers. It is the charitable arm of the British Society of Gastroenterology.



The Bowel Disease Research Foundation funds high quality, practical research, which improves treatment and survival rates for bowel disease patients across the UK. In the last round, BDRF committed funding to three research projects into bowel disease costing £98,000.



The Primary Care Society for Gastroenterology is the voice of primary care gastroenterology, a voice that is listened to by those making decisions which affect primary care. The PCSG produces evidence-based guidelines for GPs and promotes research in general practice.



Bowel & Cancer Research funds scientific and clinical research to save lives and improve the quality of life of individuals with bowel cancer and other bowel conditions. The organisation funds scientific and clinical research, involving the public in the design and delivery of this, and raises awareness of these diseases.



St Mark's Hospital Foundation supports the work of St Mark's Hospital in Harrow, the world's first specialist bowel hospital, founded over 180 years ago. The charity raises crucial funds for research, education and training in disorders of the gastrointestinal tract and pelvic floor, so that treatment outcomes for patients with bowel conditions can be improved all over the world.

'Gut Week is an initiative of Core, Bowel & Cancer Research, St Mark's Hospital Foundation, Bowel Disease Research Foundation and the Primary Care Society for Gastroenterology, supported by Yakult UK Limited. None of the medical or charity partners endorses any specific commercial or pharmaceutical products.'

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