



August - September 2011 Feature Story:

"Blackcurrants and Intestinal Health the Science Highlight of the 2011 European Blackcurrant Conference."

Blackcurrants and Intestinal Health the Science Highlight of the 2011 European Blackcurrant Conference.

The Four Leaf Japan Co. Ltd invited Dr. Molan from the Institute of Food, Nutrition and Human Health, Massey University, Palmerston North, NZ to carry out an animal study to determine whether First Leaf and CAM30 [Antioxidant products derived from blackcurrant are already on the shelf in Japan for general health promotion] can positively modify the colonic microflora by enhancing the growth of the beneficial bacteria (lactic acid bacteria), reducing/inhibiting the growth of some pathogenic bacteria and the ability to inactivate the toxic bacterial enzymes which are known to be involved in colonic carcinogenesis (1-3). The results show for the first time that both First Leaf (FL) and CAM30 have a prebiotic activity as evidenced by their ability to enhance the growth of lactobacilli and bifidobacteria and suppress the growth of some pathogenic bacteria in rats. In addition, both products decrease the activity of β -glucuronidase enzyme (bacterial enzyme mainly generated by *E. coli*, *Clostridium* spp. and *Bacteroides* spp.). The results have been presented at the first International Blackcurrant Conference which was held in Christchurch, New Zealand in 2008, before they have been published in the *World Journal of Microbiology and Biotechnology* (26:1735–1743) in 2010 (4).

Following the promising outcomes of the animal study, Four Leaf Japan Co. Ltd invited Dr. Molan to carry out a pilot human study aimed at determining whether these results can be replicated in healthy humans. For this study, thirty healthy volunteers were recruited and divided randomly into 2 equal groups and given orally FL [4 capsules (1500 mg)/day] and CAM30 [4 capsules (672 mg)/day], respectively for 14 consecutive days. Three stool samples from each subject were collected; at baseline (d0; period 1), after 2 weeks (d14; period 2) of products ingestion, followed by samples at week 4 (d28; washout, period 3). The samples were stored at -80°C until the numbers of bacteria were monitored. Fluorescent in situ hybridization (FISH) molecular technique was used to monitor the numbers of good and bad bacteria in the fecal samples using genus-specific oligonucleotide probes. The activity of some bacterial enzymes in the fecal samples was also determined.



Dr Abdul Lateef Molan, pioneering research into the gastrointestinal health benefits of blackcurrant extracts.

The results of the human study were very promising, and have been presented at the 16th European Blackcurrant Conference in Goes, Netherland, May 2011. Generally, the results of the pilot study support those seen in rats. FISH analysis showed that consumption of FL and CAM30 led to significant increases in the population sizes of beneficial bacteria (such as lactobacilli and bifidobacteria), and to a reduction in the population sizes of undesirable bacteria (such as *Bacteroides* spp. and *Clostridium* spp.) when compared to the baseline period. In addition, consumption of FL and CAM30 led to a significant reduction in the activity of β -glucuronidase, a well-known marker for colon cancer. This enzyme is generated mainly by *E. coli*, *Bacteroides* spp. and *Clostridium* spp. This finding may be explained by the reduction in the populations of *Bacteroides* spp. and *Clostridium* spp. in the same stool samples.

In conclusion, The results of this study open up the possibility that consumption of First Leaf and CAM30A may offer significant benefits to human health through acting as prebiotic agents (via increasing the numbers of lactobacilli and bifidobacteria in the gut) and novel inhibitors of β -glucuronidase enzyme which is known to be involved in colon carcinogenesis (1-3).

These promising results need to be confirmed in another randomized, double-blind, placebo-controlled, and crossover human study involving healthy volunteers.

References

1. Goldin, B.R. (1990). Intestinal microflora: metabolism of drugs and carcinogens. *Ann Med* 22:43–48.
2. Skar, V., Skar, A.G. and Stromme, J.H. (1998). Beta-glucuronidase activity related to bacterial growth in common bile duct bile in gallstone patients. *Scand J Gastroenterol* 23:83–90.
3. Johansson, G., Holmen, A. and Persson, L. (1997). Dietary influence of some proposed risk factors for colon cancer: fecal and urinary mutagenic activity and the activity of some intestinal bacterial enzymes. *Cancer Detec Prev* 21:258–266.
4. Molan, A.L., Liu, Z. and Kruger, M. (2010). The ability of blackcurrant extracts to positively modulate key markers of gastrointestinal function in rats. *World Journal of Microbiology and Biotechnology*, 26: 1735-1743.

Important

This website article is to do with research relating to gut health and other human health conditions. As noted by the scientist, more research is required before any claims can be made. The International Blackcurrant Association does not advocate using this research about a serious health matter, to promote general retail blackcurrant products. Only products developed and proven to meet the values indicated by the research, and approved by regulatory authorities for such claims, should be promoted as such to consumers. But the research is part of a growing portfolio of knowledge that shows the wonderful potential various types of blackcurrant might provide for human mental and physical wellbeing and longevity.

For further information/photographs please contact:

Bill Floyd/General Manager/International Blackcurrant Association: blackcurrant@xtra.co.nz ;

Tel + 64 3 578 2706 ; Mob + 64 27 5999 188

312 Scott Street Blenheim New Zealand.