



ZESPRI INTERNATIONAL LIMITED

**MEDIA RELEASE**

**24 June 2008**

## **Promising Studies show ZESPRI™ GOLD Kiwifruit May Boost Natural Defences**

A new study published this week in *Food and Agricultural Immunology* adds to the growing body of evidence that kiwifruit may help boost the body's natural defence mechanisms.

Lynley Drummond, Health Science Manager at ZESPRI International, based in New Zealand, said "This study provides more promising evidence that kiwifruit can help improve the body's natural defence response."

The study<sup>1</sup> (conducted by scientists at Bioactives Research New Zealand) showed that mice consuming kiwifruit extract – an extract of both ZESPRI™ GOLD and ZESPRI™ GREEN kiwifruit – had a far better immune response to two types of vaccination, both in the levels of antibodies produced against the vaccinations in blood and surface cells, and in the levels of protective innate immunity cells, which the body uses to identify and destroy harmful processes in the body. This was compared to mice in the placebo group.

"We all know that consuming fruit regularly is good for us, but we wanted to know if kiwifruit in particular, could have a beneficial effect on the body's defence system," said Ms Drummond. "What we found in this study seems to indicate that it does, at least in a well-researched animal model and these findings complement those of a earlier study<sup>2</sup> (conducted by scientists at The Horticulture and Food Research Institute of New Zealand and AgResearch) published in *Nutrition Research April (2008)* which also demonstrated a positive effect of ZESPRI™ GOLD Kiwifruit on immune responses."

Together both studies provide strong evidence that kiwifruit may have a positive effect on the immune system. The next steps are to confirm these findings in human clinical trials.

Possible reasons for the outstanding effect of ZESPRI™ GOLD Kiwifruit on natural defence mechanisms include:

- The high vitamin content. ZESPRI™ GOLD Kiwifruit are high in vitamin C and vitamin E, compared to most other fruit.
- The high antioxidant content - in particular the amounts and unique balance of carotenoid antioxidants. These compounds have previously been shown to boost natural levels of resistance.
- The high soluble fibre content, important for healthy gut function, which is one of the body's most important areas for natural defence.

These publications signal the beginning of ZESPRI International Limited's new kiwifruit health research platform – NATURAL PROTECTION - and there is a body of science underway to support this platform.

**ENDS**

## Research details

<sup>1</sup> **Title:** Kiwifruit extract enhances markers of innate and acquired immunity in a murine model.  
*Food and Agricultural Immunology 2008; Volume 19, Issue 2 June 2008 , pages 149 – 161*

**Authors:** Shu Q, Mendis De Silva U, Chen S, Peng W, Ahmed M, Lu G, Yin Y, Liu A, Drummond L.

**Abstract:** The present study examined the effects of a kiwifruit (*Actinidia chinensis* and *Actinidia deliciosa*) extract on immune response in BALB/c mice. The effects were investigated using cholera vaccine (11 days duration) and diphtheria/tetanus toxoid-vaccine (29 days duration) models. Mice were given either test (standard diet incorporated with kiwifruit extract) or control diets *ad libitum* throughout the respective experimental periods. At the end, blood, spleen and intestinal fluids were collected for determination of cell proliferation, specific antibody responses, cytokine production, phagocytosis, and natural-killer cell activity.

Kiwifruit extract significantly enhanced ( $p < 0.05$ ) specific intestinal mucosal and serum antibody responses to the vaccines and promoted interferon- $\gamma$  and natural killer cell activities. No significant ( $p > 0.05$ ) improvement was observed in proliferative response, phagocytic activity and interleukin-4 production. The overall results of the present study demonstrate the ability of kiwifruit extract to enhance markers of innate and acquired immunity in the tested murine model.

For a full copy of the research paper, please go to:

<http://www.informaworld.com/smpp/content~content=a793614705~db=all~order=page>

<sup>2</sup> **Title:** Feeding ZESPRI™ GOLD Kiwifruit puree to mice enhances serum immunoglobulins specific for ovalbumin and stimulates ovalbumin-specific mesenteric lymph node cell proliferation in response to orally administered ovalbumin.

*Nutrition Research, Volume 28, Issue 4, April 2008, Pages 251-257*

**Authors:** Denise C. Hunter, Michel Denis, Natalie A. Parlane, Bryce M. Buddle, Lesley M. Stevenson and Margot A. Skinner.

**Abstract:** The health benefits of fruits have been recognized for some time, but only recently have their effects on the immune system been investigated. Kiwifruit contains vitamins, minerals, and phytochemicals that are known to be important for normal functioning of the immune system. In this work, the influence of feeding two ZESPRI™ GOLD Kiwifruit processed products (Tauranga, New Zealand) on immune function in mice was investigated. Using a model to demonstrate adaptive immune responses in the gut, mice were fed either ZESPRI™ GOLD Kiwifruit puree or ZESPRI™ GOLD Kiwifruit 40° Brix Juice concentrate for 20 days, during which time they were immunized via the oral route with ovalbumin and subsequently given a suboptimal dose of the mucosal adjuvant cholera toxin. ZESPRI™ GOLD Kiwifruit puree enhanced the response to ovalbumin by significantly increasing the levels of total immunoglobulins and immunoglobulin G specific for ovalbumin and enhanced the antigen-specific proliferation of cells from the draining mesenteric lymph nodes compared with mice fed a 20% sugar control. These results indicate that ZESPRI™ GOLD Kiwifruit can modulate an antigen-specific immune response and suggest that ZESPRI™ GOLD Kiwifruit may represent a new type of functional food ingredient.

For a full copy of the research paper, please go to:

[http://www.sciencedirect.com/science?\\_ob=MImg&\\_imagekey=B6TB1-4S7J1X7-6-5&\\_cdi=5129&\\_user=10&\\_orig=browse&\\_coverDate=04%2F30%2F2008&\\_sk=999719995&\\_view=c&\\_wchp=dGLzVzz-zSkzS&\\_valck=1&\\_md5=77ea07ff701456a6f92171e252c0e91f&\\_ie=/sdarticle.pdf](http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6TB1-4S7J1X7-6-5&_cdi=5129&_user=10&_orig=browse&_coverDate=04%2F30%2F2008&_sk=999719995&_view=c&_wchp=dGLzVzz-zSkzS&_valck=1&_md5=77ea07ff701456a6f92171e252c0e91f&_ie=/sdarticle.pdf)

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