

## team capabilities



## nutrition and health team

The Nutrition & Health Team takes a multi-disciplinary approach, collaborating with scientists within Crop & Food Research and at other organisations with the aim of adding value at every point along the value chain from raw materials to finished products.

### COMPOSITION OF FOOD

Accurate food and nutrient information is important on several levels, from improving individual health to enabling manufacturers to comply with regulations governing food production and retailing. We provide up-to-date nutrient information to food processors, health professionals (including nutritionists and dieticians), retailers and consumers in New Zealand and around the Pacific.

We develop and maintain the New Zealand Food Composition Database in partnership with the Ministry of Health. The database contains information on more than 2700 foods commonly eaten in New Zealand and up to 100 core nutrients. The information is available through consultancy services, databases, publications, and our website. We also provide nutrient labelling and analysis for Nutrient Information Panels on food products.

New scientific findings have raised awareness of the relationship between food and health and the role of microcomponents in the properties of food products. These findings are important for both consumers and the food industry. The Nutrition & Health Team investigates the role and activity of food components and uses this knowledge to work with the food industry to improve the health benefits of existing foods and to develop new products.

We apply our scientific knowledge to a range of foods including fruit, vegetables, grains, cereals, seafood, meat and dairy products.

Our research focuses on three main areas

- determining the composition of foods
- investigating the role and health benefits of food and food components
- applying this knowledge to the development of food products

### INVESTIGATING THE ROLE OF FOOD COMPONENTS

We evaluate the effects of foods and food components on health. This includes identifying beneficial components in foods and investigating how these influence health. We do this by

- identifying and quantifying food components including antioxidants, carbohydrates and dietary fibre
- predictive modelling of food components on health, using animal models, and by undertaking clinical trials

**Antioxidants** Fresh produce and food ingredients are analysed to identify and quantify individual antioxidants and other phytochemicals, and their biological activity. Processed foods and beverages are also examined to establish the effects of processing on these compounds.



### Carbohydrates and digestive fibre

The nutritional properties of foods and food ingredients, particularly in relation to carbohydrates and dietary fibre, are investigated and developed to produce user friendly information for consumers. Developments include new valid measures of blood glucose response and digestive health which are applicable to a wide range of people including sports people, the elderly, and those with diabetes or on weight-control programmes. The concepts are validated in short-term and long-term clinical trials.

**Fatty acids** The role of oils and fats in health are investigated through human nutrition research. Omega 3 oils are of particular interest in the areas of brain and cardiovascular health.

**Predictive modelling** The digestibility and nutritional quality of food products is evaluated using animal models. This work ensures nutrients are digestible, and provides proof of the health benefits of products. Expertise includes dietary protein quality, dietary lipids and health, digestive physiology, nutrient requirements, protein and lipid metabolism, bioavailability and evaluation of food safety.

**Human health and behaviour** Our researchers participate in a range of collaborative studies with the medical schools at Auckland and Otago Universities, and with Massey University. These studies involve clinical trials in areas such as the role of nutrition in asthma, cognitive decline, depression, diabetes and stroke recovery. Scientists also have research interests in the role of nutrition in behaviour.

### DEVELOPING FOOD CONCEPTS

We develop innovative, value-added food concepts, ingredients and products in partnership with manufacturers. The services of our Food Concepts Unit can be used to complement a manufacturer's in-house R&D capability, or we can provide contract services to a manufacturer to develop ingredients, prototypes, food concepts or finished products.

Our researchers have a broad range of skills and experience with food systems and a thorough understanding of ingredient functionality and interactions. Once a promising concept is selected, we can develop bench top formulations and prepare for consumer testing and scale-up.

We can help optimize the formulation of a new food product, or reformulate an existing

product. We can also help find new uses for existing ingredients and add value to under-utilised waste streams.

Our clients benefit from our multidisciplinary approach, which brings together expertise from a range of areas to develop innovative solutions with consumer appeal.

## Overview of current projects

### WELLNESS FOODS

Foods that combine the healthy components of fruits and vegetables with those of dairy products is the goal of a six-year research programme with HortResearch, supported by Fonterra and Enzafoods. A new class of 'wellness' foods, based on concentrating health components from fruits and vegetables and integrating them with those of dairy ingredients, are being developed. Crops of interest include apples, kiwifruit, berryfruit and carrots. Successful concepts will be developed for export markets by industry partners.

### NUTRIGENOMICS

We are members of a four-way partnership with Auckland University, AgResearch and HortResearch undertaking research into nutrigenomics – a new field of research examining individual responses to nutrients and defining nutrition requirements based on genetic make-up. This programme brings together complementary research capabilities to underpin the development of food products of the future tailored to individual needs. The six-year programme is funded by the Foundation for Research, Science and Technology.

### A FOOD-BASED APPROACH TO DIGESTIVE HEALTH

We are leading a four-year research programme that aims to develop high value foods that can either prevent or treat conditions associated with infection by *Helicobacter pylori*, a bacterium that can lead to gastritis, ulcers and gastric cancer. These conditions are traditionally treated with drugs once the symptoms appear. The work is being undertaken in partnership with the natural health care company, Comvita. Our collaborators are the University of New South Wales and the Christchurch School of Medicine.

### KEY STAFF

The team has 24 staff in Palmerston North and Lincoln.

## CROP & FOOD RESEARCH

Private Bag 4704

Christchurch

New Zealand

Tel. +64 3 325 6400

Fax +64 3 325 2074

www.crop.cri.nz

## contacts

### Team Leader (Palmerston North)

Anne Perera

Phone +64 6 355 6153

Mobile 027 478 3979

Email pereraa@crop.cri.nz

### Business manager (Lincoln)

Bridget Radford

Phone +64 3 325 9664

Mobile 021 412 411

Email radfordb@crop.cri.nz

### FOOD COMPOSITION

Nelofar Athar

Email atharn@crop.cri.nz

### ANTIOXIDANTS

Carolyn Lister

Email listerc@crop.cri.nz

### CARBOHYDRATES, DIETARY FIBRE AND GLYCAEMIA

John Monro

Email monroj@crop.cri.nz

### PREDICTIVE MODELLING

Chrissie Butts

Email buttsc@crop.cri.nz

### CLINICAL RESEARCH

Karen Silvers

Email silversk@crop.cri.nz

### DIGESTIVE HEALTH

Anne Perera

Email pereraa@crop.cri.nz

### FOOD CONCEPTS DEVELOPMENT

Shankar Cumarasamy

Email cumarasamys@crop.cri.nz