

# Grain Processing Platform

Grain Foods CRC Ltd headquartered in Sydney, Australia was set up to improve the value and competitiveness of the grains industry through the delivery of unique, higher value functional foods. The company develops technologies that meet market needs in terms of cost, health and nutrition using a combination of genetic and processing technologies that enable the commercialisation of differentiated grain based ingredients.

The **Grain Processing Platform** supports improvements in grain process quality and yield through technologies that influence the biochemical and structural properties of grains. Treatments reduce cost and improve fractionation quality in processes as diverse as flour milling and the heat treatment of pulses. As an example it has been found that biologically active ingredients such as plant hormones and enzymes added at tempering can increase the extraction rate in wheat milling.

## Grain BioProcessing:

This technology has improved flour yield through the use of novel biochemical grain treatments. Monoclonal antibodies have been used to identify specific cell components in order to establish targets for modification during the milling process. This work has been supported by proteomics to identify proteins present in the grain that could restrict or promote applied grain treatments. Several grain treatments based on plant hormones and enzymes have demonstrated increased milling efficiency. This patented technology has entered National Phase in several jurisdictions.

## Pulse Processing:

A patented processing method has been developed that enables the cost effective treatment of pulses to remove the beany flavour often associated with legumes. The first commercial application of this technology has been in the development of a high nutrition, low allergy ingredient that is suitable for a wide variety of “free-from” foods. Moreover this new process is generally applicable to a wide range of pulses such as soy, chick peas etc. The technology has entered National Phase in several jurisdictions.

## Malting Barley Process:

The capacity utilisation of malting plants is high and the capital cost of expansion is significant. An alternative approach is to stretch capacity by shortening the time required for malting. This would both defer capital expenditure and reduce the energy and water required in malt production. The key target in achieving this result is to shorten the germination and modification period. It has been shown that specific barley genes can influence this outcome. This technology is protected by trade secret.

## Process Instrumentation:

Flour water absorption can be directly related to flour production yield. The current method for testing flour water absorption is highly operator-dependent, prone to poor accuracy and cannot be used on grain flour that does not form viscoelastic dough. This makes it unsatisfactory for the level of process control required in modern bakery operations. A novel operator-independent on-line method for the process measurement of flour or ground wheat water absorbance has been developed and a prototype instrument is under trial. This technology is protected by trade secret.

## Canola Meal Processing:

Currently oil extraction for food and biodiesel are the main commercial uses for canola seeds. Although canola oil is a high value product, profitability of the oil extraction process depends on revenue generated from meal. Since canola meal is a good source of valuable nutritional compounds such as proteins, lipids, carbohydrates, essential vitamins and minerals, the meal is a potential source of higher value food or feed ingredients. Despite its high nutritional value, the usage of canola meal as a food/feed ingredient has been restricted by the presence of toxic compounds (glucosinolates) and anti-nutritional factors (phenolics, phytates, etc). Grain Foods has developed proprietary technologies for the production of canola meal fractions that overcomes these problems.

For more information on these and other grain processing technologies and how your business can benefit from a partnership with Grain Foods please contact:

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