

# WHAT IS THE MARKET OPPORTUNITY FOR FUNCTIONAL FOODS & FUNCTIONAL INGREDIENTS FOR SOUTH AUSTRALIA?

Australia is facing an ageing population together with an increasing incidence of lifestyle related diseases such as diabetes. Aligned with this, there is growing awareness of the importance of healthy living and nutrition.



FUNCTIONAL FOODS

**PREMIUM**  
FOOD AND WINE FROM OUR  
**CLEAN**  
ENVIRONMENT





This fact sheet presents information about the opportunities for South Australia in functional foods and ingredients.

## What are the opportunities for functional foods?

Australia is facing an ageing population together with an increasing incidence of lifestyle related diseases such as diabetes. Aligned with this, there is growing awareness of the importance of healthy living and nutrition. The expected market growth in broad functional food product categories from the Research Project are outlined in Table 1 followed by a brief summary for each category.

**Table 1: Market overview and expected growth for broad categories of functional foods in Australia.**

Functional type	2014 value (million USD)	Projected growth rate per annum (%) to 2020
Polyunsaturated fatty acids	21	6
Proteins and peptides	826	5.6
Vitamin D	8.5	3.4
Probiotics	45	8.9
Prebiotics	38	9.7
Aloe vera	5	13
Phytosterols	13	9.8
Carotenoids	34	7.3
Polyphenols	3.7	Not reported#
Gluten free	90	11.2
Lactose free	39	8

# Reported at a value of 5.7 million USD in 2020

- The use of polyunsaturated fatty acids, such as Omega-3, is one of the most established functional product markets in Australia with an increasing focus on including these as ingredients in foods. Recent queries regarding the actual health benefits have slowed this market somewhat, although it is expected that manufacturers will overcome this in the longer term. Current products are largely used in infant formulas and breads with beverages becoming increasingly popular due to advances in water solubility. Other products in the market include fortified oils, cereals, baked goods and eggs.

- Australia is a key producer of dairy-based proteins and peptides. Current sources of protein in the marketplace are derived from dairy, gelatin, egg proteins, fish, meat, soya, pulses and proteins from microorganisms. A dietary trend for increased protein and less carbohydrate is driving demand for protein rich foods. It is expected that there will be increased demand in fitness associated products and in the protein beverage sector. The market will continue to be driven by dairy-based proteins; however, increasingly soya-based, egg-based and plant-based proteins are gaining interest amongst consumers.
- Given Australia's aging population, the lack of Vitamin D is an area of concern for Australians as it is known to promote normal bone structure. For this reason, Vitamin D deficiency is a key risk factor for falls and fractures in the elderly. The demand for Vitamin D is expected to grow, which is likely to increase the demand for functional foods with added Vitamin D. It is considered that fortified dairy and beverages will be the main market sectors.
- Probiotics are Australia's leading ingredient in the area of digestive health. The market, which is currently dominated by probiotic yoghurt, is expected to grow as manufacturer's increase validity of their claims. As demand increases, it is expected that this sector will offer significant opportunities for increased production of probiotic foods and beverages.
- The health benefits of prebiotics are less well known in Australia when compared to probiotics. However, with increasing occurrence of irritable bowel syndrome, it is expected that consumers will progressively respond to health messages regarding prebiotics. Future growth will likely be delivered by innovations on prebiotic and probiotic formulations delivered through a single functional food product. There is a wide range of products currently available, from breakfast cereals to beverages. In addition, several Australian produced prebiotic ingredients are now emerging into the market, which are sourced from avocados and whole grains.
- Australia is an exporter of aloe vera with a focus on the cosmetic industry and a secondary focus on the beverage market. The growing interest in the antioxidative properties of these extracts is expected to increase demand in Australia where aloe vera based drinks are already available.
- There is an existing market for phytosterols in Australia due to their ability to lower cholesterol in humans. Soya-based phytosterols are the most commonplace with fortified spreads being the traditional vector. Additionally, there is an increasing occurrence of fortified milks.



- The Australian carotenoid market is dominated by the use of beta-carotene as a health ingredient and as a source of natural colour. However, the beneficial effects on some cancers are expected to continue to drive demand for these products. Functional beverages will continue to be a major part of this market with an increased focus on dairy and baked goods as formulation stability and processing techniques continue to improve.
- The market for polyphenols in Australia is likely in its infancy, although there is wide ranging raw material base available for the development of these ingredients. The Australian industry has been largely import dependent; however, recent demand has been seen in the wine and apple industries, particularly in the supply of resveratrol and polyphenols sourced from apples and olives for use in beverages. As the benefits of these compounds become more recognised, it is expected that their use will move beyond that of beverages into a broader range of functional foods.
- Australia possesses an established gluten free market and is also an important exporter to other markets such as the United States and Western Europe. The demand for these products has increased to meet the needs of people with coeliac disease and also those seeking a low or no gluten diet. The most established gluten free product categories include biscuits, snacks and meat products - gluten free pastas and bread are also common in the market place. The increased demand for this market sector is expected to continue.
- Lactose free products are also well established in the Australian marketplace; these products are largely restricted to the liquid milk and infant milk powder options. Increased diagnosis of lactose intolerance is continuing to drive demand for these products and wide ranging alternatives are appearing in supermarkets such as lactose free yoghurt, cheese, cream and ice-cream.

## What are the opportunities for functional ingredients?

With all functional ingredients, consideration must be given to the harvest conditions, processing conditions, storage parameters and quality control mechanisms to develop stable ingredients. In addition, the formulation of these bioactive compounds in food products should also be considered to ensure that they are delivered to the consumer in a form that can be used to achieve the intended benefit. In some cases, novel approaches such as microencapsulation is used to encase and protect the compound.

The Functional and Luxury Foods Research Project identified those functional ingredients that could potentially be developed and manufactured in South Australia. A summary of these compounds including their potential health effects and likely sources is outlined below:

- Polyunsaturated fatty acids are long chain fatty acids that are beneficial to human health such as those from the omega-3 and omega-6 groups. These acids can be derived from variety of sources such as algae, fish and plant products (for example seeds). Eicosapentaenoic acid and Docosahexaenoic acid are two particular polyunsaturated fatty acids that are important for heart health and play an anti inflammatory role.
- Proteins and peptides are biological molecules that are derived from a wide variety of animal and plant-based sources such as animal meat, whey and nuts. Proteins are beneficial for a variety of factors such as maintenance of muscle mass and are necessary for normal growth and development in infants. Peptides are similar to proteins except they are smaller in size. They can also provide various functional benefits including reducing blood pressure and cholesterol and acting as an antioxidant.
- Vitamin D is produced in the skin of humans, terrestrial animals, fish and some microorganisms by exposure to the sun. Vitamin D is essential to maintain absorption of calcium in the gut and kidney. It also promotes a range of health benefits such as maintaining normal bone structure and teeth and it contributes to normal growth in children. It should be noted that Vitamin D is the most toxic amongst the vitamins and as with fortification of all foods, the dose should be carefully considered.





- Probiotics are bacteria, which are applied as live cultures and have the ability to ferment dietary fibre to produce short chain fatty acids. These short chain fatty acids result in increased acidity in the lower colon that promotes the growth of beneficial bacteria and less favourable conditions for harmful bacteria. The increased acidity also aids mineral absorption. Lactobacillus and bifidobacteria are examples of common probiotic bacteria. Cultures are incorporated into fermented dairy products; however, they are also available in freeze dried forms that can be included into other foods.
- Prebiotics are dietary carbohydrates, such as resistant starches and insoluble fibre, which stimulate the growth of beneficial bacteria over less favourable bacteria to enhance the development of a healthy gut and promote health in the human host. They include indigestible carbohydrates such as oligofructose and inulin, lactulose and polyphenols and a variety of resistant starches.
- Aloe vera is a plant that is related to onions, garlic and asparagus that possesses lance shaped cactus-like leaves. The compound referred to as aloe vera is the gelatinous substance contained within the leaves. It has long been used to treat a range of skin conditions and as an anti-inflammatory. Recent research has suggested that oral ingestion of aloe vera can result in a reduction in blood lipid and blood glucose levels; however, there is some question over the validity of some of these health effects.
- Bioactive polyphenols are plant-based polyphenolic compounds that play an important role in the human diet. The focus on these compounds has increased in recent years due to their antioxidant, free radical scavenging effect. Extracts of polyphenolic compounds from berries, (such as blackberries, blueberries, mulberries, raspberries and strawberries) are well known to have health promoting effects. Red grape juice and skins are a source of beneficial polyphenolic compounds including resveratrol, which, in addition to helping to prevent obesity and diabetes, has been shown to inhibit occurrence and progression of some types of cancer.
- Phytosterols are similar to cholesterol in structure, but only found in plant-based foods. They have beneficial effect of limiting cholesterol absorption due to competitive exclusion with cholesterol in bile acid and by precipitating cholesterol in the intestinal tract. These compounds dissolve readily in lipids or fats and they are more effective when consumed in edible fats and oils. For this reason, they are often fortified in spreadable margarines, but have also been included into milk-based beverages.
- Carotenoids are phytochemicals that are commonly found in fruits and vegetables and provide the rich colour associated with these foods. One well studied carotenoid in terms of health promotions is lycopene, which provides the red colour in tomatoes, and is also found in several other fruits such as grapefruit and watermelon. These compounds are also known to have antioxidant effects that may reduce tissue damage and have an anti-inflammatory effect. It is also suggested to be associated with low incidence of cardiovascular disease and to reduce risk associated with some cancers.

