

PULSES: POOR MAN'S FOOD OR FUTURE SUPER FOOD?

The humble pulse was once the favoured food of many ancient civilisations. Could it also be the answer to sustainable food in the 21st century?

Words by Prof Vijay Jayasena and Dr Syed Abbas

The cultivation and consumption of pulses (grain legumes) dates back to around 10,000 years ago.¹ Pulses were the staple foods for many ancient civilisations and there is evidence to suggest the consumption of pulses was related to improving health and wellbeing of those civilisations.

However, in modern societies, pulses are often perceived as the 'poor people's diets' or 'poor man's meat' as many low-income people take advantage of rich protein content and low cost of pulses to fulfil their daily protein requirements. In general, countries with lower per capita income have higher consumption of pulses. It is estimated that around 75 per cent of world pulses used for food are consumed in developing countries and only 25 per cent are consumed in developed countries. Yet economic growth in developing countries has seen a decline in pulse consumption per capita (although total consumption of pulses is increasing due to population growth) and an increase in dairy and meat product consumption.

Major health problems such as obesity, diabetes, cardiovascular disease and cancer are increasing at an alarming rate. It is well known that lack of exercise and poor or unhealthy diets that are high in saturated fats, sugar and salt and/or low in dietary fibre and bioactive compounds are responsible for these health problems. Anti-carcinogenic, anti-diabetics and anti-ageing effects, as well as cholesterol lowering effects and prebiotic properties of pulses have also been well-documented. It is expected that pulses will play a vital role in developing future foods to cope with

ever increasing world health problems.

Malnutrition is another major health challenge facing the planet, with around one billion people under-nourished. Malnutrition can lead to heart disease, diarrhoeal diseases, less immunity to infectious diseases, and reduced mental growth. The high price of protein-rich foods with balanced essential amino acid profiles is one of the major reasons for the protein malnutrition. However, pulses are low cost sources of protein and minerals, which can be exploited to develop high-protein, low-cost and acceptable foods to address the malnutrition.

As a result of the unique chemical composition and environmentally friendly nature of the crops, including the ability to fix atmospheric nitrogen thus reducing the chemical fertiliser requirement, pulses will play a crucial role in future foods and sustainable food production. Almost all pulses are rich in proteins (including amino acid lysine which is a limiting essential amino acid in cereal based diets), dietary fibre (both soluble and insoluble), vitamins, minerals and health enhancing bioactive compounds.

Pulses are not popular in western diets because of poor consumer acceptability, mainly due to unpleasant taste and poor texture. Incorporating pulses into western diets without compromising the consumer acceptability is a challenging task, due to the high dietary fibre content (poor texture), anti-nutritional factors (e.g. trypsin inhibitor, phytates and tannins), flatulence causing oligosaccharides and the consumer perception that pulses are animal feeds.



However, there is hope on the horizon. As a result of ever increasing diet-related health issues, the current demand for superfoods is predicted to increase exponentially. This is especially the case for emerging Asian countries such as China and India during the next few decades. In collaboration with universities, research organisations and food companies in Australia and throughout Asia, a number of research projects aiming at developing a range of pulse-based foods are in progress. 🌱

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References

1. Caracuta, V., Barzilay, O., Khalaili, H., Milevski, I., Paz, Y., Vardi, J., Regev, L. & Boaretto, E. 2015. The onset of faba bean farming in the Southern Levant. *Scientific Reports* 5, Article number 14370. <http://www.nature.com/articles/srep14370#ref2>



Prof Vijay Jayasena is presenting on *Poor Man's Food or Future Super Foods* on Tuesday, 28 June at the 49th Annual AIFST Convention.