

Seed sprouts and microbial safety

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SUMMARY : Sprouts are one of the most complete and nutritional of all foods tested. Sprouts are real-life vitamins, minerals, proteins and enzymes. Their nutritional value was discovered thousands of years ago. Recently, numerous scientific studies in India as well as in the world suggest the importance of sprouts in a healthy diet. Because sprouts are predigested food, they have a higher biological efficiency value than whole seeds, raw or cooked. Also, sprouts have a regenerating effect on the human body. The chemical changes that occur in the sprouting seed activate a powerful enzyme factory, never to be surpassed in later stage growth of any legumes. The rich enzyme concentration can lead heightened enzyme activity in your metabolism, leading to regeneration of the bloodstream. Sprouts are the ideal supplement- The food of the future. They are economical, ecological, low in calories/fat, easy to store, fast and easy to grow, tasty and versatile to eat. This paper presents wide-ranging research and the latest developments in this emerging sprout processing technology.

KEY WORDS : Seed sprouts, Germination, Nutritional profile, Microbiological properties, Safety issues

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In many countries worldwide, including the India, the consumption of seed sprouts has increased in recent decades with the advent of nutraceuticals, phytochemicals (Shetty *et al.*, 2003) and the shift of consumer preference toward health foods (Rosario, 2003; Pandrangi *et al.*, 2003). Seed sprouts are one of the most common vegetables consumed in the India due to availability and nutritional value. The sprouts, locally known as *Ankorit Dals*, are available in markets all year round and contain high-quality proteins comparable to those obtained from expensive animal and marine sources. However, the nutritional quality and the sprouting methods employed by local sprout growers make the commodity susceptible to microbial contamination and therefore, compromise the safety and quality of the sprouts. Unlike many developed countries where seed sprouts are produced in large industrial scales that allot enough capital for the procurement of appropriate sprouting equipment and

facilities, sprouting in our country is most commonly done on a micro scale as a part of the growing backyard industry. With capital limited for the procurement of raw materials and simple sprouting equipment, other necessities required in assuring sprout safety are often not available.

Sprouts are very nutritious because they contain all elements a plant needs for life and growth. The endosperm of the seed is the storehouse of carbohydrates, protein, and oil. When the seed germinates, these become predigested amino acids and natural sugars upon which the plant embryo feeds as it grows to maturity. When used as food, the life force is released and supplies the energy which is capable of generating healthy cells in the body and supplying us with new vigour and life. Used as an adjunct to the diet, sprouts can retard the aging process, since they contain ample amounts of male and female hormones, available in their most assimilable form. Processed foods often lack the vitamins and minerals necessary to a balanced diet. Research shows that, in sprouts, one finds one of the foods highest in vitamin and mineral content (Shipard, 2005). Sprouts should, therefore, occupy a prominent place in the diet. Among their other virtues is the fact that the seeds are low in cost, can be stored safely for longer duration, and are easy to grow and when sprouted, increase their nutritional value many times. Germinated seeds are recommended to cure scurvy. Malic and oxalic acids collected

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