

Microbiological and biochemical characterization of seera: A starch based bioenriched fermented food of Himachal Pradesh

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Fermented foods and beverages have been in the Indian food menu since ages. In Himachal Pradesh people have developed traditional food processing technology for preparing conventional fermented foods from locally available substrates largely governed by the ethnic preference, agro-climatic conditions, socio-cultural ethos and religion. Seera is a traditional fermented food prepared in Bilaspur, Kangra, Hamirpur, Mandi, Shimla and Kullu districts of Himachal Pradesh. It is a starch based food made by soaking, crushing and fermenting wheat grains used to prepare sweet dish/snack generally served people during religious fast. Samples during seera fermentation were analyzed for various microbiological and biochemical parameters. The microflora isolated from seera mainly comprised *Saccharomyces cerevisiae*, *Cryptococcus laurentii* and *Torulospore delbrueckii* among yeasts and *Lactobacillus amylovorus* and *Leuconostoc sp.* among bacteria. The biochemical analysis of seera revealed that it is an acidic food having a pH of 3.4 and titrable acidity of 0.44%. It has 10.4±0.20 % (w/w) protein, 89.0±0.43 mg/g of dry matter total proteins, 87.4±1.51 mg/g dry matter starch and 11.9±0.53 mg/g dry matter reducing sugars. The activities of amylase and protease were 3.6±0.36 U/g and 1.02±0.05 U/g respectively. A significant increase in thiamine, riboflavin, nicotinic acid and cyanocobalamin was observed during fermentation of seera. The level of essential amino acids especially methionine, phenylalanine, threonine, lysine and leucine also increased during seera fermentation. As seera is biologically enriched with vitamins and amino acids during fermentation so it forms a good source of nutrition to the people who consume it.

Biography

Savitri has completed her Ph.D. (Biotechnology) in 2007 at the age of 28 years from Himachal Pradesh University, Shimla and then worked as Assistant Professor in Abhilashi Institute of Life Sciences, Nerchowk, Mandi, Himachal Pradesh for 3 years. At present she is pursuing her postdoctoral studies from Himachal Pradesh University, Shimla. She has published 5 research papers and reviews in reputed journals and 1 chapter in book. She is Life Member of Association of Microbiologist of India and Founder Member of SASNET (Swedish South Asian Network of Fermented Foods, Sweden).

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Micropropagation of *Jatropha curcas* for effective bio-diesel production

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There is a worldwide trend towards use of biodiesel as a substitute for diesel to reduce air pollution. Biodiesel is a form of diesel fuel manufactured from vegetable oils, animal fats. The action of our study is energy from crops can be an alternative renewable source of energy for solving fuel crisis. The non-edible vegetable oil of *Jatropha curcas* has the requisite potential of providing a promise and commercially viable alternative diesel fuel, since it has desirable physiochemical and performance characteristics comparable to diesel fuel. Seed kernel contains about 33-60% *curcas* oil. Micro propagation is the growing of plants from meristematic tissue or somatic cells of superior plants on nutrient suitable media under controlled aseptic physical conditions. In our study the healthy *Jatropha curcas* plants were developed by micro propagation technique using MS medium. Shoot bud proliferation from axillaries was assessed on an initial basal Murashige and Skoog (MS) salt medium supplemented with different concentrations of benzyladenine (BA), and IAA along with adenine sulfate, glutamine. In vitro produced shoots were induced to root on half-strength MS medium supplemented with IBA.

The highest frequency of shoot induction was recorded in the medium supplied with 3.0 mg BA/L and 1mg IBA/L. Highest roots induction in 3mg IBA/L. Regenerated plantlets were successfully transferred in the field (coir pith) after initial acclimatization.

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