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Novel processing of soybean to produce milk: An enzymatic approach

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Conventional method of soymilk extraction method vs Enzyme assisted soymilk (Hi-Media cellulase enzyme from *Trichoderma viride* and pectinase enzyme from *Rhizopus* spp. were used at varied concentrations to temperature and time combinations) method were studied. This study was mainly focused on standardizing the time period for pre-soaking of soybean grains that was followed by boiling of those pre-soaked grains and to observe its effect on the soymilk quantity and quality. The results have shown exactly double milk yield with enzyme assisted soymilk extraction method (cellulase enzyme was found substantial effective in milk extraction to pectinase enzyme) to the conventional soymilk extraction method. The observations for various quality parameters for soymilk obtained from cellulase and pectinase enzymes ranged were: pH (6.75-6.82), proteins (45- 56mg/ml), fat (12-13mg/ml), carbohydrates (5.9-6.2mg/ml), Solid not fat (SNF:2.1-3.1mg/ml), acidity (0.30-0.35percent), non-reducing sugars (07-20mg/ml), flavonoids (610-640mg/ml) and total soluble sugars (5.0-5.5percent). The quality parameters for the soymilk obtained from conventional method had a pH of 7.2, proteins 26mg/ml, fat 14.2mg/ml, carbohydrates 4.9mg/ml, Solid not fat SNF:5.2mg/ml, acidity 0.36percent, non-reducing sugars 10mg/ml, flavonoids 590mg/ml and total soluble sugars 6percent. In terms of the soymilk quantity and quality, the enzyme assisted method of soymilk extraction can be considered as an alternative over conventional method of soymilk production for the soymilk production with higher percentage of proteins, flavonoids with decreased fat, carbohydrates, SNF, acidity, total solids and pH. Beside good nutrition, the enzyme assisted extracted soymilk showed higher sensory score in taste, colour, texture, and flavour on a 9-point hedonic scale. The sensory overall acceptance for soymilk obtained from conventional method was 5.80 while for pectinase-cellulase assisted soymilk ranged between 4.87-7.47. Thus, enzyme assisted extraction method can be considered as a novel processing method for soymilk extraction with enriched nutritional quality, double milk yield and less of by-product (OKARA). As a whole de-hulled soybean can be completely converted to milk.

Biography

Jyoti Rani, Assistant Professor, Food Science and Technology, TIET, Patiala (India) has an expertise in dairy, cereals, soybean and fruits& vegetable processing. She has more than 6 years of teaching and five years of research experience in the food science and technology field. She is intending to develop novel processing methods with less of inputs and more of quality with quantity keeping in mind the growing population and their nutrition. Enzymatic approach towards soymilk production has been intervened with an approach to reduce the wastage during conventional soymilk production and as well improving the digestibility of the soy proteins.

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