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**Hydrolysis of raffinose family oligosaccharides in soy milk by immobilized a-galactosidase isolated from coconut endosperm**

Soymilk is important as an economical high protein beverage. However presence of a high concentration of raffinose family oligosaccharides in soymilk, which cause flatulence has decreased its acceptance as a popular beverage. In this study purified -α galactosidase from coconut endosperm was immobilized on hydrophobic gels and these gels were used to hydrolyze raffinose family oligosaccharides in soymilk. α-Galactosidase from coconut endosperm was purified to homogeneity by acidification, ammonium sulfate fractionation (50-75%) and DEAE ion exchange chromatography. The purified enzyme had a specific activity of 24.5units/mg and the recovery was 52.6%. The purified enzyme was shown to be homogenous by polyacrylamide gel electrophoresis. α --Galactosidase was immobilized by hydrophobic interactions using four types of ligands bound to sepharose-4B gel. When purified α -galactosidase was applied to each of the four gels, sepharose-4B -lysine-aminocapronilide, sepharose-4B urea-alanin-bexoate, sepharose-4B-amino capromilide, sepharose-4B-urea-caproic, the percentage binding was 1.9%, 8.9%, 89% and 85.6% respectively. The first two gels did not have significant raffinose hyraffinose hydrolysis capacity where as the latter two gels hydrolyxed 83.8% and 48.3% of a 1% raffinose solution respectively in four and half hours at a flow rate of 40ml/hour.

Cellulose thin layer chromatography revealed 2.5% ( ±1.59) raffinose, 4.10%( ± 1.31)stachylose and 6.62% (± 2.74)total flatulence causing oligosaccharides in locally produced soymilk sold in the market. When the gels (10ml) were packed in dialysis tubes and immersed in soymilk (200ml) with continuos stirring, total flatulence causing oligosaccharides were reduced by 73.3% and 53.3% by sepharose-4B amino capronilide gel and sepharose-4B urea caproic gel respectively in ten hours. Total raffinose sugar after treatment with sepharose-4B aminocapronilide gel decreased to 1.2%, Flatulence can be avoided by decrease in the raffinose family sugar contact below 2%. Therefore this treatment could be used to avoid the occurrences of flatulence after consumption of soymilk.