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Extraction of polyphenol oxidase from green and red apple fruits and the effect of pH variation on the enzyme's activity

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Polyphenol oxidase is present in the majority of plant tissues and it is involved in adverse browning of plant products. Crude polyphenol oxidase (PPO) was extracted from flesh and peels of green and red apple fruits and the concentration of the enzyme in the flesh and peels of the fruits was determined spectrophotometrically. The activity of the enzyme in the green apple peel, green apple flesh, red apple peel and red apple flesh were found to be 2.15, 1.30, 0.70 and 2.65 $\mu\text{molmin}^{-1}\text{cm}^{-3}$ respectively. The effect of pH on the stability of the enzyme's activity was also investigated. Catechol at a concentration of 20 mM was used as a substrate while sodium acetate buffer (0.2M) with a pH range of 3.6-5.6 and sodium phosphate buffer (0.2M) with a pH range of 6.0-8.0 were used to monitor the effect of pH on the activity of the enzyme. From the results obtained, optimum pH for crude PPO extracted from the green apple peel, green apple flesh, red apple peel and red apple flesh were 7.6, 6.4, 8.4 and 8.0 respectively. Increase or decrease of pH from this range caused decrease in the activity of the enzyme. This can therefore be a good way of controlling undesirable changes in these fruits.

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New trends in probiotics: Exploring the probiotic potential of *Streptococcus thermophilus*, a lactic acid bacterium usually employed in food/dairy industry

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Probiotics are live micro-organisms that when administered in adequate amount, confer health benefits to the host like, relief in lactose intolerance and constipation, prevention and cures diarrhea, anti-microbial, anti-carcinogenic, anti-mutagenic activities, stimulation of immune system and alleviation of urogenital health incidences. A probiotic should be capable of resisting the acids and bile salts in gastrointestinal tract, should transit through the gut in viable form and be recovered in feces, resist the degradation by digestive enzymes and oxygen stress, must be safe with demonstrable efficacy and should be able to reach the distal tract in viable form. Now-a-days consumer's interest for nutraceuticals and functional foods is directly related to their interest in maintaining good health. At present yogurt is of wide importance, due to its high scale consumption. It has been successfully used in therapeutic studies against diarrhea, hyper-tension and lactose intolerance and it has been used for maintaining intestinal microbial balance. *Streptococcus thermophilus* is one of the basic starter bacteria of yogurt and the second most important species of industrial lactic acid bacteria after *Lactococcus lactis*. It could have great probiotic potential as it has been shown to survive gastro-intestinal transit and moderately adhere to the intestinal epithelial cells. It is capable of producing β -galactosidase, thus playing a vital role in reducing lactose intolerance. Besides, it is capable of producing anti-microbial substances like bacteriocins and exopolysaccharides which not only confer rheological, textural and sensory properties to yogurts, but also increase the adhesion of the bacterium to enterocytes and stimulate the immune system. It possesses many peptidolytic and proteolytic enzymes capable of generating bioactive peptides and enhancing mucin secretions. Thus, the health benefits of yogurt combined with the functional properties of *S. thermophilus* could represent an advantage over other probiotic functional foods and could be enhanced by increasing the research done on its properties of survival in the host and its other probiotic properties.

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