

Hydrolysis of Starch in Palmyrah Root Tuber Preparations

Vinayagamoorthy. V¹, Thayaananthan. K², Vasantharuba. S¹, Balakumar. S² and Arasaratnam. V²

¹Department of Agricultural Chemistry, University of Jaffna, Sri Lanka.

²Department of Biochemistry, University of Jaffna, Sri Lanka.

The objective of this project was to hydrolyze the starch in unboiled and boiled dried palmyrah root tubers. The starch contents of the two flour preparations were 120 gL⁻¹. When 160 gL⁻¹ unboiled & dried root tuber flour suspensions at pH 5 were hydrolyzed with the commercial α -amylase, glucoamylase and their mixture at 70°C; 9.56, 2.94 and 9.92% of starch were hydrolyzed respectively. Here the activity of glucoamylase was more inhibited than α -amylase by the substances in unboiled & dried root tuber. In order to compare the inhibitory effect of the substances in unboiled & dried root tuber with boiled & dried root tuber, both the preparations were hydrolyzed with glucoamylase and commercial starch was used as the control. When the unboiled and boiled dried palmyrah root tubers and commercial starch suspensions (160 gL⁻¹) were treated with glucoamylase 3, 12.5 and 73% of the starch (at 70°C and pH 5) was hydrolyzed respectively. Thus the activity of glucoamylase was more inhibited by the substances in unboiled & dried root tubers than that of boiled & dried root tubers. Since the commercial enzymes were inhibited by some active principles in palmyrah root tuber the fungus which contaminated unboiled & dried root tuber were isolated and identified as *Aspergillus* sp, *Mucor* sp, *Fusarium* sp and *Rhizopus* sp and the amylase produced by one of them was used. Since *Aspergillus* sp is well known for amylase production, it was selected. The fungal amylase hydrolyzed 4, 38.8 & 12.5% of starch in unboiled and boiled dried root tuber, and commercial starch suspensions (160 gL⁻¹) respectively at 60°C and pH 7.0. Hence the activity of fungal amylase was more effective on starch in boiled dried root tubers than unboiled dried root tubers.