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STUDENT NAME: THANDI MSWABUKI

SUPERVISOR

PROF. T. DJAROVA (CHAIRPERSON - DEPARTMENT OF APPLIED BIOLOGY)

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To find the optimum temperature/time relationship for denaturation of soyabean using its characteristic properties.



ABSTRACT

Urease is a classical specific enzyme - an amide hydrolase it splits urea only to ammonia and carbon dioxide. It is widely distributed in plants especially leguminous and cucurbitaceae. Urease activity in stock feed and in isolates is a cause of death of poultry, pigs and humans due to liver poisoning by ammonia.

The optimum conditions for the activity of urease were determined both invitro (in meal) and in the pure extract. The extract of urease was prepared by organic solvent precipitation.

The optimum temperature for urease was found to be 70° C at pH 7.0 for both meal and extract. Most enzymes function best at a pH range close to their isoelectric point. Urease is indifferent to this and under conditions of the test, the optimum pH was 4.5 very far from the isoelectric point which is at pH 9.

Moist heat treatment (toasting) was found to denature the urease if toasted for 30 min at 95° C with 100% moisture. If the meal after toasting was dried to 5% total moisture, the activity remained nil even after storage for 3 weeks at this moisture content. If the meal was dried to any moisture content above this there was residual urease activity which increased with storage at higher moisture levels. Urease is activated by presence of moisture above 6%.

Cycles of freeze-thaw-heat to 95° C and cool also rendered the activity of the extract nil. Ultra violet radiation had no profound effect on urease activity of both meal and extract.