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**A COMPARATIVE STUDY OF AMYLASE ACTIVITY OF GERMINATING  
SEEDS OF MUNG BEAN (*VIGNA RADIATA* L.), COWPEA (*VIGNA  
UNGUICULATA* L.) AND SOYA BEAN (*GLYCINE MAX* L.).**

**A PROJECT REPORT PRESENTED**

**BY**

**A. AJANTHA KUMARI BOKALAMULLA**

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**ABSTRACT**

**A COMPARATIVE STUDY OF AMYLASE ACTIVITY OF GERMINATING SEEDS OF MUNG BEAN (*VIGNA RADIATA* L.), COW PEA (*VIGNA UNGUICULATA* L.) AND SOYA BEAN (*GLYCINE MAX* L.).**

A. A. K. BOKALAMULLA

BOARD OF STUDY OF SCIENCE EDUCATION

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The total and  $\alpha$ -amylase activity of germinating seeds of three pulses, mung bean, cow pea and soya bean, were determined and compared by a spectrophotometric procedure using iodine as the colour indicator. The objective of the study was to develop suitable source of amylase for the starch-amylase assay, included in the G.C.E. (Advanced Level) Biology syllabus. The study showed that the three species displayed amylase activity at all stages of germination, starting from 24h after soaking. The total amylase activity in all extracts was higher than  $\alpha$ -amylase activity alone thus indicating that other amylases were also present in the germinating seeds. The soya bean seeds soaked for 24 h. showed amylase activity but this was not found to be due to any  $\alpha$ -amylase

activity. In a previous study the mature seeds of soya bean have been shown to contain very active  $\beta$ -amylase activity. This study also showed that the germinating seeds of mung bean displayed comparatively higher  $\alpha$ -amylase activity than the other two pulses used. Mung bean seeds showed a low level of  $\alpha$ -amylase activity initially but increased significantly during the following 48-72 h period of germination. Mung bean seeds also showed the highest germination rate among the three pulses investigated, thus showing a positive correlation between the onset of germination followed by radicle extension and  $\alpha$ -amylase activity. On the other hand, in cowpea seeds the amylase activity remained steady during germination, and the germination rate was rather slow. The presence of high  $\alpha$ -amylase activity in germinating seeds is beneficial for a starch-amylase assay because  $\alpha$ -amylase reduces the colour intensity of iodine rapidly with reaction time. The results showed that mung bean seeds germinate for 48 - 72 h after soaking have the highest  $\alpha$ -amylase activity among the three species studied. Therefore mung bean seeds could be used as a suitable source of  $\alpha$ -amylase activity for laboratory assay. In addition it was found that 0.1 M acetate buffer for the extraction of enzyme and in the reaction medium could improve the reliability of the assay.

