β-GLUCOSIDASE ACTIVITY OF SOYBEAN RADICLES IN GERMINATION

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INTRODUCTION

Isoflavones are non-nutritive compounds with benefits for human health and they are the mainly forms of glycosides in vegetables. β-glucosidase (β-D-glucoside glucohydrolase, E.C. 3.2.1.21) catalyzes the hydrolysis of terminal non-reducing sugars residues in β-D-glucosides releasing the glucose molecule and have a high specificity for isoflavones. The aim of this work was to investigate the β-glucosidase activity in soybeans radicles during germination process to find alternative sources of β-glucosidase.

METHODOLOGY

Soybean (cultivar BRS 257) seeds were germinated in papers, following the standard model, utilizing two germination chambers (one with photoperiod of 10h of light and the other without light) at the temperature of 35 °C and relative humidity of 100% for different periods (72, 96, 120, 144 and 168 hours). The radicles appeared at 72h. They were separated at each experimental time and freeze-dried. β-glucosidase from the radicles was extracted with citrate buffer containing NaCl. Soluble protein content was determinated in the supernatant and β-glucosidase activity was determinated using p-nitrophenyl-b-D-glucopiranoside as substrate.

RESULTS AND DISCUSSION

In germinated seeds under light, β-glucosidase activity increased from 72h and presented the maximum concentration at 144h (19,333.36 UA/g). In samples germinated without light, β-glucosidase activity increased from 72h to its maximum concentration at 144h (9,018.84 UA/g). At 168h, the β-glucosidase activity started to decline.

CONCLUSION

β-glucosidase activity was twice higher at 144h with light than without light, showing that radicles from soybean germinated with light over this period would be a good source of β-glucosidase. Additional studies are needed to investigate the purification and the utilization of this β-glucosidase in the hydrolysis of glucoside isoflavones.