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PEROXIDASE IN THAI VEGETABLES

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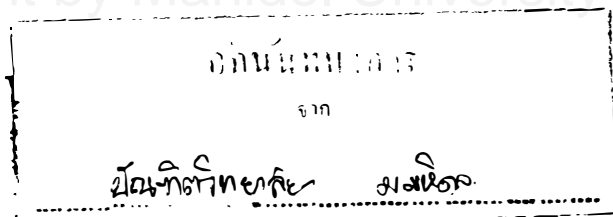
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ABSTRACT

New sources with high peroxidase activity in Thai vegetables were surveyed. 3,3'-diaminobenzidine was used as substrate due to its sensitivity and ease of usage. The same vegetables in 4 parts of Thailand exhibited the same trends for peroxidase activity. Among these, Thai horseradish, Choy-sum, convolvulus, climbers, cabbage, spring greens and spinach show interesting peroxidase activity.

Various vegetables were further investigated for storage stability of their peroxidase crude extract. It was found that the crude enzymes was better kept at 4°C than at room temperature. However, even at room temperature little activity was lost when left to stand for one day.

Choy-sum was the first Thai vegetable chosen for study of its peroxidase. It has a MW range of 30,000 as determined by Sephadex G-200 column and at least 12 isoenzymes when isoelectric focusing was performed. Its apparent K_m ($2.5 \times 10^{-4} M$) for diaminobenzidine was less than that of HRP ($4.17 \times 10^{-4} M$).

Several methods to enrich Choy-sum peroxidase for further applications were tried. The partial purification by using CM-cellulose column gave 190 purification fold, 69% yield of Choy-sum peroxidase basic isoenzymes. The basic isoenzymes can conjugate with IgG. This was confirmed by ELISA.

For other applications, peroxidase from Thai vegetables can precipitate phenols and amines from water similarly to HRP.