

**IDENTIFICATION OF MILK CLOTTING ACTIVITY FROM
DIFFERENT SOURCES OF PLANT'S PROTEOLYTIC
ENZYMES**

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ABSTRACT

IDENTIFICATION OF MILK CURDLE ACTIVITY FROM DIFFERENT SOURCES OF PLANT'S PROTEOLYTIC ENZYMES

Traditional bovine rennet used for cheese processing was high cost and limited in resource. A study was done to find replacement of the curdling activity of milk using different sources of plant's proteolytic enzymes which are bromelain enzyme from the core of pineapple and papain enzyme from the leaves of papaya. The method of milk clotting activity used to determine the time taken of the milk to coagulate caused by selected enzyme at specific temperature. The efficiency of calcium chloride is crucial to create isoelectric to cause aggregation of milk protein until it reach optimum pH for reaction occur where optimum concentration of calcium chloride for rennet, bromelain and papain are 0.03M, 0.05M and 0.07M. Next, rennet have highest milk clotting rate and followed by papain and bromelain. Other than that, proteolytic activity is conducted using tyrosine as standard to determine the strength of protease at different enzyme serial dilution ability to hydrolyse casein micelle by absorbance measurement from UV-VIS spectrophotometer. Rennet are reportedly have low proteolytic activity and papain has the highest rate of proteolytic activity compared to bromelain. Last but not least, milk clotting index is measured by ratio between milk clotting activity and proteolytic activity to determine the quality of protease to form curd of cheese. In conclusion, bromelain have highest milk clotting index when using pure enzyme that shows it is the best substitution to bovine rennet for cheese production. This research can be continue further in production of miniature cheese using the enzymes to understand the structure of cheese quality can be produced.