

Production of a biopesticide based on a cysteine protease enzyme from latex and papaya (*Carica papaya*) for *Spodoptera litura* in red chili peppers (*Capsicum annuum*)

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Abstrak

Spodoptera litura is one of the major pests on red chili peppers (*Capsicum annuum*). Larvae damage crops by biting, chewing, and then eating the lower surface of the leaves. The leaves became transparent white, and severe damage only leaves the leaf's midrib and veins. Papaya latex (*Carica papaya*) could be used as a pesticide because it contains cysteine protease, which is a substance that can inhibit the insects from eating the leaves or even kill the pests. The purpose of this study was to produce an organic pesticide from the cysteine protease extracted from papaya latex that is effective against *Spodoptera litura*. A completely randomized design was used with latex from papaya leaves, papaya rind, and papaya fruit. The methods used were blending and tapping. The blending method was conducted via a chemical extraction using buffer phosphate and ammonium sulfate. The tapping method was conducted via a chemical extraction using acetone. These methods were compared by using an enzyme activity test and efficacy test. The enzyme activity test used a UV-Vis spectrophotometer and the efficacy test was done on *Spodoptera litura* larvae, which were given red chili pepper leaf covered with an organic pesticide from cysteine protease.