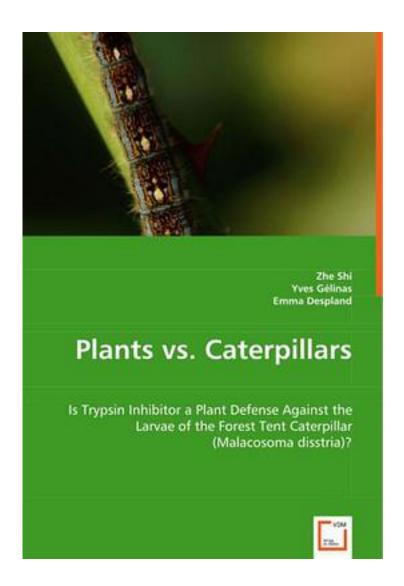
Plants Vs. Caterpillars- Is Trypsin Inhibitor a Plant Defense Against the Larvae of the Forest Tent Caterpillar



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Forest tent caterpillars (Malacosoma disstria) are ubiquitous defoliating insects in North America. In Canada, trembling aspen is their favourite host tree, which can produce an inducible protein, trypsin inhibitor (TI), to inhibit trypsin, a major proteolytic enzyme in caterpillars' midguts. To determine the digestion-inhibiting effect of TI on M. disstria, this study focused on the performance of second instar larvae with different levels of TI on both balanced and low protein diets. Both protein deficiency and higher levels of TI impaired the growth of caterpillars, but the impairing effect of TI only appeared on the caterpillars fed on balanced diet. This study confirmed the digestion-inhibiting function of TI as a defense of aspen against forest tent caterpillars. Also, it suggested that caterpillars were able to regulate their growth under severe protein deficiency, possibly as an adaptation to this defense.

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