

P014 A report on the multiplicity of cellulase activity in pests and its comparison with multiple forms of bacterial cellulases
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Cellulases are the enzymes which are responsible for the conversion of cellulose into its subunits which are further converted into glucose. Recently it has been reported that apart from bacteria and fungi, some insects also produce their own cellulase enzymes which enable them to utilize cellulose as food. Here we report a study based on the screening of local species of pests for endo-beta 1,4-glucanase activity. A number of insects were screened for cellulase activity and was compared with the bacterial cellulases. Our screening results showed that the insects commonly known as beetle and grasshopper were able to hydrolyse carboxy methyl cellulose including pumpkin beetle (*Aulacophora hilaris*), spotted pumpkin beetle (*Aulacophora abdominalis*), black fungal beetle (*Alphitobius laevigatus*) and grasshopper (*Chrotogonus trachypterus*). The insects were collected from local vegetation and total cellular proteins were extracted from pests after protein precipitation. The protein preparation was subjected to non-denaturing PAGE along with the cellulase produced by bacteria *Cellulomonas flavigena*. After electrophoretic run separated proteins were identified for cellulase activity by incubating the gel on a substrate-agar plate. The endo-beta 1,4-glucanase activity appeared as lighter bands when stained with congo red. It was observed that in each sample at least two endo-glucanase bands were visible. The multiple forms of insect cellulases appeared at lower positions as compared to bacterial glucanases, could be due to heavy glycosylation of bacterial cellulases as cellulose was used as a carbon source in fermentation media for the growth of *C.flavigena*.