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Screening and partial characterization of inhibitors of insect β-*N*-acetylglucosaminidase

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Abstract:
Microbial culture broths were screened for novel β-*N*-acetylglucosaminidase (GlcNAcase) inhibitors specific for the enzyme of insect origin. Four strains of actinomycetes, *Streptomyces griseoloalbus* JCM4480, *S. clauifer* JCM5059, *S. anulatus* NBRC13369 and *S. griseus* subsp. *rhodochrous* NBRC13849, produced unique compounds showing selective inhibition of the insect GlcNAcase. In contrast, 4 fungal strains, *Paecilomyces* sp. F13, F30, *P. carneus* F2281 and *Verticillium* sp. F40, were found to produce GlcNAcase inhibitors showing a broad spectrum of inhibitory activity against GlcNAcases from insects, mammals, plants and fungi. These results indicated obvious differences in GlcNAcases between insects and other organisms. This is the first report of enzyme inhibitors specific for the GlcNAcase of insect origin.

Keywords:
chitin metabolic turnover, chitinolytic enzyme system, enzyme inhibitor, insect growth regulator (IGR), microbial metabolite, β-*N*-acetylhexosaminidase (EC 3.2.1.30)

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