INTRODUCTION
Previous results from our group showed that *Tenebrio molitor* midgut has a β-galactosidase highly active on hydrophobic aglycone substrates. Its physiological role is supposed to be the hydrolysis of galactolipids that are major component of plant cell membranes.

OBJECTIVES
To further study the properties and function of β-galactosidase that are poorly known in insects, we try to have the major T.mol enzyme in a recombinant form.

MATERIALS AND METHODS
Two complete β-galactosidase sequences were found in a transcriptome from *T.molitor* midgut and the sequence with greater number of reads was chosen. The selected cDNA was cloned in pETSUMO vector, the recombinant protein was induced in *E.coli* strain BL21(DE3) and the soluble activity was purified by affinity chromatography. A phylogenetic analysis was performed for insect and mammalian β-galactosidases.

DISCUSSION AND RESULTS
The recombinant enzyme has specific activity against p-nitrophenyl-β-galactoside of 243 U/g. The enzyme sequence has 653 amino acids with a signal peptide of 17 residues and pertains to the family 35 of glycoside hydrolase. Sequence alignment with other insect and mammalian enzymes showed that this enzyme has the two catalytic glutamate residues plus several other residues important for the activity the *Homo sapiens* β-galactosidase. Maximum likelihood phylogenetic analysis showed that the *T.molitor* enzyme is more similar to the β-galactosidase from *Tribolium castaneum* and *Periplaneta americana* than to the enzymes from *Bombyx mori* and *Glossina morsitans morsitans*. The last ones branch together with the *H.sapiens* enzyme known to be lysosomal. Hence, it is possible that *B.mori* and *G.m.morsitans* are lysosomal, whereas *T.castaneum* and *P.americana* enzymes are digestive as that of *T.molitor*. In spite of the limited sample, the digestive enzymes have the consensus sequences G-G-X-D-M/Y-X-X-F/L-L and L-V/L-X-X-P/K-S/K-X-X-D/Q-L/V-X-X-F that lacks in the putative lysosomal enzymes.

CONCLUSIONS
A *T.molitor* β-galactosidase was cloned and expressed with activity.

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