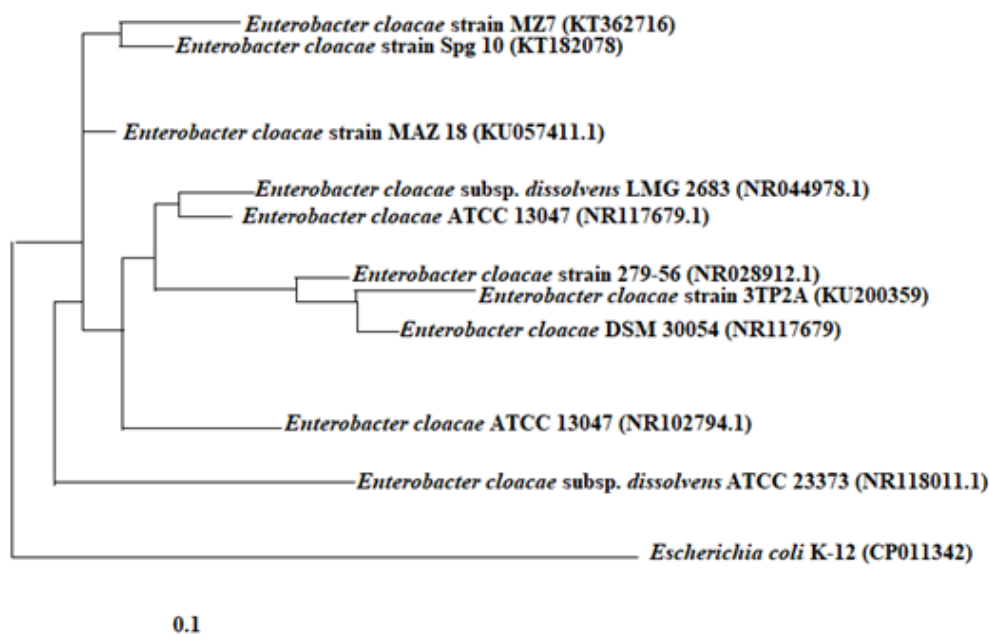




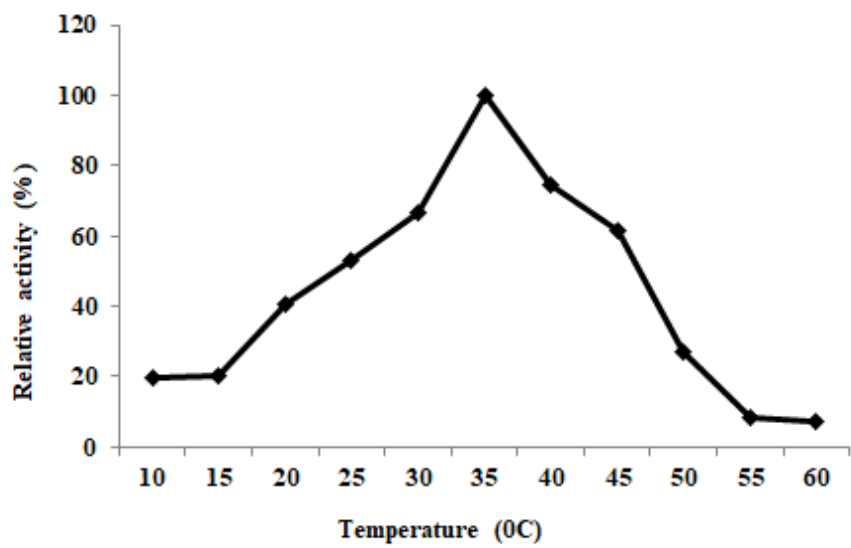
Phylogenetic analysis of 16S rRNA gene sequence similarities of *Enterobacter* sp. 3TP2A

Supplementary 1. Phylogenetic analysis of 16S rRNA gene sequence similarities of *Enterobacter* sp. 3TP2A based on the BLAST result using the neighbor-joining method. Scale bar represents 0.1 substitutions per nucleotide position. The organisms and GeneBank accession numbers of analyzed sequences are given in parenthesis.

Supplementary 2. Some properties of β -galactosidases from bacterial sources.

Bacteria	Enzyme temperature	Enzyme pH	M.W kDa	Reference
<i>Enterobacter</i> sp. 3TP2A	35 °C	8.0-9.0	60	The present study
<i>Bifidobacterium infantis</i> HL96	37 °C	-	113	Hung et al. ³⁸
<i>Enterobacter agglomerans</i> B1	37-40 °C	7.5-8.0	homodimer 248	Lu et al. ¹⁶
<i>Enterobacter cloacae</i> B5	35 °C	6.5-10.5	homotetramer 442	Lu et al. ¹⁹
<i>Streptococcus mitis</i>	30-40 °C	6-6.5	268	Campuzano et al. ²⁰
<i>Bacillus</i> sp. BPTK4	55 °C	7.0	65	Natarajan et al. ¹⁴
<i>Bacillus subtilis</i>	35 °C	8.0	120	El-kader et al. ²²
<i>Lactobacillus</i> sp.	37 °C	7.2	116	Sumathy et al. ²³
<i>Escherichia coli</i>	35 °C	7.0	-	Khedr et al. ³⁵
<i>Enterobacter cloacae</i> SJ 6	50 °C	9.0	340	Ghatak ³⁷

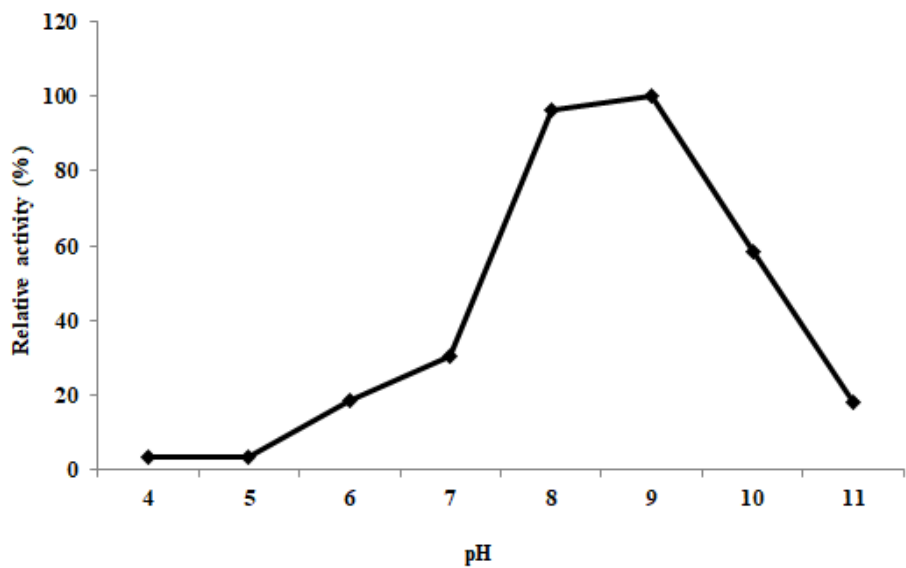
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a) Effect of temperature on β -galactosidase activity in *Enterobacter* sp. 3TP2A

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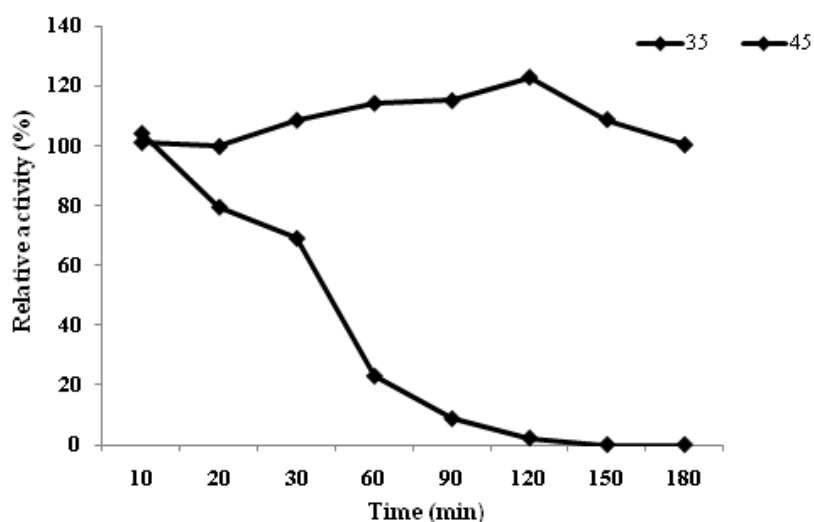
Supplementary 3a. Effect of temperature on β -galactosidase activity in *Enterobacter* sp. 3TP2A



b) Effect of pH on β -galactosidase activity in *Enterobacter* sp. 3TP2A

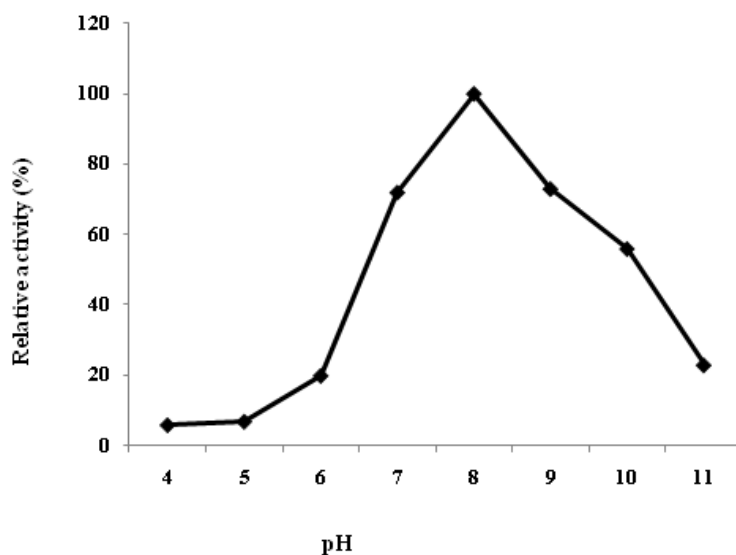
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Supplementary 3b. Effect of pH on β -galactosidase activity in *Enterobacter* sp. 3TP2A



a) Effect of thermal stability on purified β -galactosidase activity from *Enterobacter* sp. 3TP2A

Supplementary 4a. Effect of thermal stability on purified β -galactosidase activity from *Enterobacter* sp. 3TP2A



b) Effect of pH stability on purified β -galactosidase activity from *Enterobacter* sp. 3TP2A

Supplementary 4b. Effect of pH stability on purified β -galactosidase activity from *Enterobacter* sp. 3TP2A

33 **Supplementary 5.** Effect of metal ions on the activity of purified β -galactosidase from *E. cloacae*

Chemicals	Percent activity retained (%)				
	1 mM	2mM	5 mM	10 mM	20 mM
Ca ²⁺	94±2.3	95±1.5	100±1.5	105±1.0	84±2.1
Cu ²⁺	4.1±0.1	0	0	0	0
Mg ²⁺	117±1.5	125±2.3	120±0.3	120±1.5	147±2.3
Zn ²⁺	68±1.8	73±0.1	92±2.9	103±2.7	ND
EDTA	32±0.9	29±0.4	27±2.4	25±0.3	24±0.8

34 **ND:** Not determined

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36 **Supplementary 6.** Effect of inhibitors on the activity of purified β -galactosidase

Chemicals	Percent activity retained (%)			
	1mM	2mM	4mM	8mM
N-ethylmaleimide	0	0	0	0
DTT	100±1.5	102±2.1	97±0.3	108±1.9
β -Mercaptoethanol	102±1.2	99±1.4	ND	114±1.5
Iodoacetamide	99±3.02	87±4.3	94±1.4	93±1.7
	0.2 mM	0.4 mM	1 mM	2 mM
PCMB	13.7±0.4	13.9±0.5	13.08±0.8	13.3±0.2

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