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A bifunctional exoglucanase-endoglucanase fusion protein

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Abstract

A fusion was constructed between the *cex* gene of *Cellulomonas fimi*, which encodes an exoglucanase, and the *cenA* gene of the same organism, which encodes an endoglucanase. The *cex-cenA* fusion was expressed in *Escherichia coli* to give a fusion protein with both exoglucanase and endoglucanase activities. The fusion protein, unlike the *cex* and the *cenA* gene products from *E. coli*, did not bind to microcrystalline cellulose, presumably because it lacked an intact substrate-binding region. The fusion protein was exported to the periplasm in *E. coli*.

Keywords

- Recombinant DNA;
- cellulase;
- exo-1,4- β -glucanase;
- endo-1,4- β -glucanase;
- fusion protein

Abbreviations

- aa, amino acid(s);
- Ap, ampicillin;
- bp, base pair(s);
- *cenA*, gene coding for EngA;
- *cex*, gene coding for Exg;
- CMC, carboxymethylcellulose;
- cs, centistokes;
- EngA, endoglucanase A;
- EtdBr, ethidium bromide;
- Exg, exoglucanase;
- GpD, glucose-6-phosphate dehydrogenase;
- IPTG, isopropyl- β -d-thiogalactopyranoside;
- LB, Luria broth;
- MUC, 4-methyl-umbelliferyl- β -D-cellobioside;
- NAD, nicotinamide-adenine-dinucleotide;
- PAGE, polyacrylamide gel electrophoresis;
- pNPC, β -nitrophenyl- β -D-cellobioside;
- Pro, proline;
- SDS, sodium dodecyl sulfate;
- Te, tetracycline;
- Thr, threonine;
- [], designates plasmid-carrier state

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