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# CHITINASE A

## POTENTIAL APPLICATIONS IN VARIOUS FIELDS

(TECHNOLOGY OFFER P -245)

*The offer is an inexpensive and efficient method of purifying chitinase A, which opens the possibility of using this enzyme in various industries.*

**Application:** agriculture, pharmaceuticals, food processing, renewable energy sources



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### Chitinases

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Chitinases are proteins, that are found in different organisms such as viruses, bacteria, plants, insects, and mammals. They are responsible for the hydrolysis of chitin, which builds, inter alia, external skeletons of insects, arachnids, crustaceans, cell walls of fungi, algae, bacteria. The prevalence of the described compounds is one of the strengths of the present invention. The present invention describes an application of chitinase A, which belongs to the family *Baculoviridae*.

### The possibility of using chitinase A and chitin derivatives in:

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- ✓ agriculture as an environmentally friendly bioinsecticide, replacing pesticides;
- ✓ food processing as a natural preservative;
- ✓ pharmaceutical industry as a formulation of a bactericide and fungicide;
- ✓ pharmaceutical industry as potential cholesterol-lowering agents;
- ✓ the energy industry with the acquisition of new, alternative and renewable energy.

Methods of chitinase purification, used so far, consisted of multi-stage and expensive procedures. Affinity chromatography was also used with so-called affinity tags. These tags could interfere with the functions of chitinase, and their cut-off was associated with the next step of digestion and purification.

**The proposed method of chitinase A purification using affinity chromatography with the involvement of G proteins is fast and efficient single-step.**

Affinity chromatography exploits the ability of proteins to specific bonds, in this case, chitinase A and protein G. This protein is derived from bacterial cell walls of

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the genus *Streptococcus* and it is now commonly used in affinity. This protein complex of chitinase A with protein-G is dissociated in aqueous solution with a low pH. This allows to extract chitinase A. What is important, an acidic environment does not affect the functionality of chitinase. Chitinase retains high biological activity even at pH = 2.

New method of chitinase A purification by affinity chromatography is **the subject of a patent application**, and the invention is still under development by scientists from the Faculty of Biochemistry, Biophysics and Biotechnology of the Jagiellonian University.

**Currently the Centre for Innovation, Technology Transfer and University Development (CITTRU) is looking for the entities interested in the commercial applications of the described solution. CITTRU is looking for the business partners for joint research and development projects involving the above research topic.**



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**More information:**

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