

PRODUCTION METHOD OF A NEW RECOMBINANT COLLAGENASE FOR COLLAGENS DIGESTION



TECHNOLOGY SUMMARY

Method for obtaining collagenase with high collagenolytic activity, through a process based on recombinant DNA technology. This new process enables collagenase purification and isolation through a simple and economical procedure, obtaining an active enzyme with remarkable storage stability.

BENEFITS

HYDROLYZING ACTIVITY ON SEVERAL COLLAGEN TYPES: type I (major component of connective tissues, i.e. bone skin), type II (cartilages) and type III (blood vessels).

MORE EFFICIENT, INEXPENSIVE AND FASTER: purification and isolation relies on a single chromatography step.

HIGH STORAGE STABILITY in both lyophilized and solution forms.

EFFICIENT DOSE/EFFECT RELATION: proven activity on collagen from cultured osteoblasts, without associated cytotoxicity.

NON-TOXIC

CONTEXT

Collagens are fibrous molecules with high proteolytic resistance and with structural and regulator roles in animal tissues. Collagenases digest collagens and are crucial for cell and tissue manipulation, treatment of human pathologies associated to excessive collagen deposition and treatment of wounds that need necrotic tissues debridement. However, commercially available collagenases have high production costs and restricted storage stability.

This technology is based on cloning and recombinant expression of an *Aeromonas spp.* collagenase gene. The genetic construction involves the inclusion of a signal peptide and a histidine tail, which effectively contribute for obtaining a pure, stable and non-toxic enzyme.

APPLICATIONS

Collagenase obtained by this method can be used in the following applications:

CELL AND TISSUE CULTURE

WOUND DEBRIDEMENT

TREATMENT OF DUPUYTREN'S DISEASE

MEAT TENDERIZE AND PROCESSING

TANNERY INDUSTRY (facilitates dyeing process and leather treatment)

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IP RIGHTS

National patent granted.

DEVELOPMENT STAGE

TRL4-5: method validated in the laboratory, with small- and large-scale prototypes.

Preclinical research – molecular and biochemical characterization, established cytotoxic effect. The results of the cytotoxicity tests are quite promising with regard to product safety.

KEYWORDS

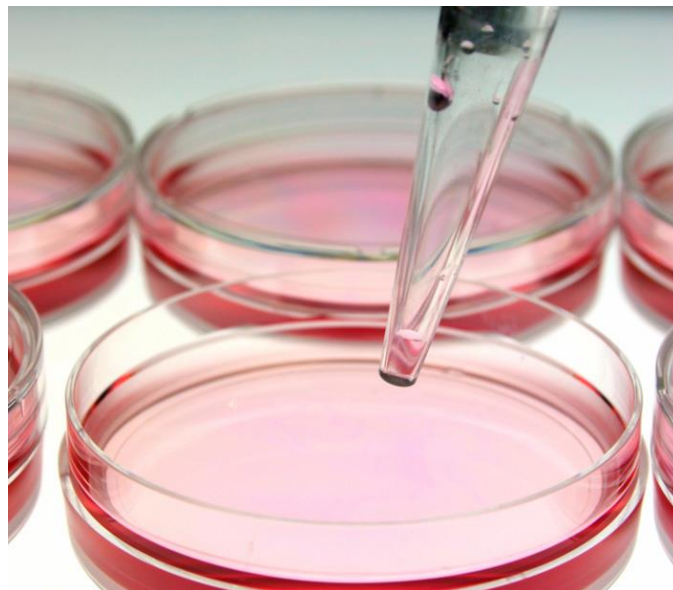
COLLAGENASE

COLLAGEN

RECOMBINANT ENZYME

CELL AND TISSUE CULTURE

STABILITY



DEVELOPED BY

Researchers of Centre for Environmental and Marine Studies (CESAM) of the University of Aveiro.

BUSINESS OPPORTUNITY

Technology transfer by licensing.

Testing of new applications.

CONTACT

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Technology #CI12022

PARTNERSHIP

The University of Aveiro seeks partners within the sector of production/purification of bioactive substances for scientific and clinical research applications.

The University is also interested in partners in tanning, food (namely for meat tendering), pharmaceuticals and cosmetics industries.