

PROCESS FOR OBTAINING A MOLECULE THAT SERVES AS AN ELICITOR OF ANTIMICROBIAL PEPTIDES

<i>Offering Organization:</i>	Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C.
<i>Type of Organization:</i>	Public Research Center
<i>Development Stage:</i>	Laboratory Tests
<i>Desired Relationship:</i>	<ul style="list-style-type: none"> – Technological research and development financing (technological partner) – Specialized application tests – Creation of a new company (Joint Venture) for the commercialization of the products outlined herein – Licensing of patents
<i>Sector:</i>	Health
<i>Area of knowledge:</i>	Medical and Pharmaceutical Biotechnology
<i>Key words:</i>	Elicitor, antimicrobial peptides, immune response, infection

DETAILED DESCRIPTION:

Problem to be solved:

The indiscriminate use of conventional medicines for the control and treatment of chronic degenerative or infectious diseases caused by microorganisms such as bacteria and viruses, among others, has led to the emergence of multi-resistant strains and/or undesirable side effects from the use of such drugs. An alternative, the administration of elicitors (enhancers) of the innate immune response, has been proposed, as have lithocholic acid and derivatives which are elicitor molecules of antimicrobial peptides and interferon II (gamma); fall within the group of microbial elicitors class II peptides; are chemicals; and present indirect activity such as the immunomodulators of the innate immune response. The chemical synthesis of this class of molecules has been described. However, these processes of synthesis require reactive conditions with temperatures higher than 60°C, which can affect the integrity of the synthetic molecules or require the use of highly toxic catalysts.

Solution:

The present invention describes a method for the enzymatic synthesis of a derivative of lithocholic acid, litocoin oleate, the purification of said molecule and its use to induce the expression or overexpression of antimicrobial peptides for treating infectious and chronic degenerative diseases in humans.

New and Innovative Aspects:

- A process of enzymatic synthesis in which enzymes act as biological non-toxic catalysts, developing under mild reaction conditions and allowing for better results with respect to the integrity of the synthetic products .
- It is found that the synthesis compound acts as an elicitor of antimicrobial peptides and type II interferon (gamma).

TECHNICAL CHARACTERISTICS:

The invention relates to an enzymatic synthesis method of oleate litocoil via the following steps: mixing lithocholic acid with acyl donors, in the presence of lipases as biocatalysts; heating and evaporating the reaction mixture under conditions of controlled temperatures; filtering the reaction mixture to remove the catalysts; separating and purifying the molecule of interest using chromatographic techniques, namely the compound litocoil oleate; lastly, concentrating the fractions with the compound of interest and storing the final product at -20°C .

Main advantages derived from its utilization:

- Reduce the high cost of synthesis, purification and storage.
- Increase the bioavailability of endogenous antimicrobial peptides for an effective response against infectious and chronic degenerative diseases.
- Offer an alternative solution to conventional antibiotics and the high incidence of resistant strains and side effects that their use cause.

Applications:

- Litocoil oleate synthesis for individually use or in combination with glucose and ascorbic acid, as elicitors of antimicrobial peptides.
- For the treatment of diseases such as tuberculosis, leprosy, atopic dermatitis, Crohn's disease, colitis, infections caused by Gram-negative and Gram-positive bacterias, fungi and viruses, as well as adjuvant live organism vaccines, inactive or subunit vaccines and recombinants, Chagas disease, cancer, leukemia, and chronic degenerative diseases such as type I and II diabetes, likewise in agrobusiness.

INTELLECTUAL PROPERTY

- Patent applied for in 2013
- MX/a/2013/0012160
- PCT/Mx/2014/000161

ABOUT THE OFFERING ORGANIZATION

<i>Presentation:</i>	El Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C. (CIATEJ) is a public research center that belongs to the national technology development and innovation network, the National Council for Science and Technology (CONACyT). CIATEJ is focused on the agricultural, food, health, and environmental sectors with an emphasis on the application of innovative biotechnology.
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