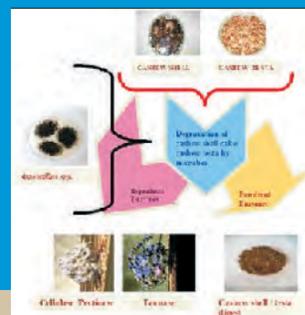


Cellulase, Pectinase and Tannase Production from Cashew By-Products



Technology Description

§ Cashew shell contains a good amount of "Cellulose" and "Pectin"; while the Cashew testa is highly rich in "Tannin". § By applying microbes the cellulose, pectin and tannin is converted into Cellulase, Pectinase and Tannase.



Name Of institute:
CEPC Laboratory and Technical Division,
Cashew Bhavan, Mundackkal, Kollam.
Stage of development:
Ready for Commercialization
Patent status: Filed
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Background

All the 3 enzymes Cellulase, Pectinase and Tannase are being produced from various resources and are commercially available. Most of this technology uses either sophisticated Fermentors or are time consuming methods. The resources for production could also be costly. § These enzymes can be purchased by less cost compared to the existing market price. The newly invented method is cost effective and environmental friendly. The waste raw material from cashew industry can lead to a

Benefits / Utility

This technology of production of enzymes from cashew by products uses the very cheap SSF (solid state fermentation) technique; but at the same time highly productive and hence profitable. Hence no such big sophisticated fermentors will be required for the production. The technology finds its application in Food industry, Textile industry,

Country Context

India.

Scalability

Pilot Scale Studies have been carried out. Small Scale as well as large scale up of the technologies is possible.

Business and Commercial Potential

Business and Market Potential: An estimated 8.5 lakh tonne of cashew shell are being generated annually in India. Most of it wasted away after extraction of CNSL. These Cashew Shell and Testa can be utilized for enzyme production. Hence large scale of enzyme production can be possible. The technology developed is cheaper and can easily be adapted. The Enzyme market for all the 3 enzymes are always emerging and hence business potential is huge. The technology finds its application in Food industry, Textile industry, Pharmaceuticals, Paper Industry etc; and hence marketing of the products will be much easier

Potential investors to this technical innovation

Cashew Industries or Companies that process Raw Cashew for Cashew kernels will be the major beneficiaries of this technology. The technology finds its application in Food industry, Textile industry, Pharmaceuticals, Paper Industry



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Financials

VALUE OF THE TECHNOLOGY: Tech commercialization fee to be charged from one licensee= 2 Lakhs each on technology transfer Financial Required: Fix assets (Land and Building) = Land 5 cents and building in it in 1000 square feet with a total expense of approx : 5 lakhs for land and 10 lakhs for the building Machinery and chemicals = Rs 10 Lakhs Others= Rs 3.5 lakhs Cost: Approx investment of Rs. 28.5 Lakhs.

Target Market / Customer

Potential Clients: Chemical Companies; that are interested in enzyme production and marketing. The technology finds its application in Food

Limiting factors for large scale commercialization

The only limiting factor is that since the enzymes are already available in the market; the technology novelty is limited to its cheapness in production of enzymes and large scale production capabilities.

Social impact of the technology

§ This technology will help various industries to procure enzymes by less cost compared to the existing market price. § The newly invented method is cost effective and environmental friendly. § The waste raw material from cashew industry can lead to a foreign exchange earner

Any other relevant information

Achievements

Cashew shell contains a good amount of "Cellulose". By applying microbes the cellulose, is converted into cellulase. Patent applied

Cashew shell contains a good amount of "Pectin". By applying microbes the pectin, is converted into pectinase. Patent

Cashew testa contains a good amount of "tannin". By applying microbes the tannase, is converted into pectinase.

Techno Economic Aspects

§ From 1 Kg of cashew shell cake, a yield of 75gm of Purified CEPC Cellulase is obtained. § C2605 Sigma-Cellulase from Aspergillus spp cost is for 1000 units/g (1 unit/mg) 50ML =Rs 6,514.5 § Cost of Cellulase Production from a 1Kg of Cashew Shell cake is Rs.4851/- § Since the CEPC Cellulase has a superior specific activity 15.322 U/mg compared to the ; the 75gm of Purified CEPC Cellulase could be sold at = Approx Rs 10,000 /- § Profit

§ Production cost of Pectinase from 1kg cashew shell cake using Aspergillus spp. = Rs.5116.26. § Price of Pectinase in international market = Rs.140/1gms (Sigma Aldrich). § The cost difference of pectinase from cashew shell compared

§ Production cost of Tannase from 1kg cashew testa using Aspergillus spp. = Rs.6784.239. § Price of Tannase in