

L(-) Malic acid production technology

The new technology of the Hungarian leading biotechnology center produces only the biologically active L(-) form. This new biosynthesis process of L(-) malic acid has proved to be more efficient and cost-effective than the presently used ones. Genetically altered micro-organisms and a continuous flow-through conversion assure the efficiency of this method. The method uses genetically enhanced, immobilized, and killed micro-organisms that have highly elevated (one thousand-fold) catalytic potential over the unaltered cells. This modification pushes the chemical equilibrium towards the required 98% conversion; consequently this new method enables an 80% conversion in industrial scale while the existing technologies have maximum 70% conversion capacity. Not only do the cell immobilization techniques increase the original activity potential, but also allow a continuous flow-through conversion. Moreover, the reactor column possesses extremely long half life time (600 days). The bioreactor does not produce any bypass products, e.g., amino acids, or other organic acids from the substrate. The scientific team scaled up the reactor technique to a working volume of 25 liters and optimized the various parameters affecting the production. A reactor with 25 liters/hour capacity can produce approximately 30 tons of L(-) malate per year. The second basic thing in the offered technology is the downstream process. We have tested a pilot, modified electro dialysis equipment (EDU) technique based on bipolar membrane operation. We have combined the bioreactor with EDU process. During the downstream process, we have recovered residual fumarate, and the alkali, and the most part of the solvent (water) too, putting them back to the first step of the technology.

Area of Application

Potential areas of use • Food industry • Chemical industry • Pharmaceutical industry

Advantages

This technology has some significant advantages in comparison with the traditional fermentation and chemical production. Firstly, downstream operations become cheaper by the high conversion rate and lack of bypass products. Secondly, the very intensive technology decreases the investment expenditures. Thirdly, it is an environment-friendly production, which does not have any effect on human health. There are no environmental risks or contraindications to use this technology, because the genetically modified cells are killed before use. No huge amount of wastewater, no bypass salts (NaCl, CaSO₄). The bioreactors are working as enzyme reactors during the process.

Environmental Aspects

Cleaner production

Development Status

Laboratory Model

Transfer Terms

Technology licensing, Research partnerships

TECHNOLOGY OFFERS

Target Countries

Worldwide

Wastewater treatment in electroplating

A Hungarian SME offers wastewater treating equipment family for treating and decontaminating wastewater deriving from surface-treating workshops. The wastewater treating equipment removes and eliminates the contaminants from various types of wastewater produced in the surface-treating workshop, in order to keep their concentration under the limits. The wastewater treating equipment is designed according to the quantity and the type of wastewater (e.g., acidic, alkaline, etc.) and with the concentration of contaminant (thin solution or concentrated solution).

Area of Application

Electroplating, Metal Processing: companies providing electroplating services and companies active in metal processing and/or machinery industry having an in-house electroplating workshop.

Advantages

All regulation relating to contaminants can be kept - water demand of the surface-treating workshops can be decreased radically - the quantity of sludge deriving from surface treatment and costs of deposition can be significantly dropped - due to the individual manufacturing, special problems can be solved - the equipment operates automatically and does not need expensive manpower

Environmental Aspects

Wastewater treatment

Development Status

Commercial prototype

Legal Protection

Secret know-how

Transfer Terms

Technology licensing, Others

Procedure for sewage sludge composting

A Hungarian SME has developed a new procedure for sewage sludge composting. The offered technology is based on the application of controlled composting for rapid degradation of organic pollutants and immobilization of inorganic micro-pollutants for safe land disposal by using industrial slurry-phase by-products (e.g., by-products from sunflower seed oil processing industry). The process of controlled composting contributes to preserve the fertilizer value. Before the composting the untreated sewage sludge is mixed with waste sludge (e.g., sludge produced by sunflower seed oil processing industry) and other specific additives to accelerate mineralization and to moderate ammonia and GHG (greenhouse gas) emission. In some cases composting simulation is used for optimization of raw material composition and gas emission controlling within 3 weeks in an adiabatic drum system. Composting

TECHNOLOGY OFFERS

occurs under controlled condition means that additives, digesters, and labile carbon sources are added continuously to the compost pile. Specific additives are responsible for the suitable and rapid mineralization and thermophilic stage to preserve fertilizer value. Depending on the properties of raw materials encapsulated wind-row composting is applied for controlled composting which means a covering of compost pile by using specific polymers. The end-product is a potential source for soil improvement and conditioning after 4-pre- and 6-week-term post-maturation stages. The whole composting process is not longer than 70–90 days.

Area of Application

Waste management, sewage works

Advantages

During the pre-storage of raw sewage sludge, the GHG (greenhouse effect) emission and f. coliform and streptococcus number is reduced significantly within 24–48 hours. - Application and utilization of non-hazardous specific additives and digesters result safe land disposal. - Application of non-hazardous additives, digesters, water treatment residual by-products is suitable for reduction of total N loss, P loss, and suppressing pathogens before and during the composting. - The offered technology is able to utilize solid phase biogas residuals, post-maturation of pre-maturation municipal sewage sludge from closed composting reactor or root-zone treatment.

Environmental Aspects

Bio-degradable and environmentally friendly

Development status

Pilot plant

Legal protection

Patent

Transfer Terms

Technology licensing

For the above three offers, contact

Laser Consult Ltd (Hungary)
H-6701 PO Box 1191
Szeged
Hungary

Microfine ginger powder with high drug and spice values

Microfine ginger powder has wide applications in pharmaceutical, brewery, soft drink, meat canning, pickle processing, curry, and confectionery industries. The microfine ginger powder can be directly added in soda water for removal of certain throat irritation and similar affections. The product has high domestic and export potential. From 5 kilogram of peeled ginger, around 700 grams of microfine powder can be produced. The process of production is free from pollution.

Area of Application

Domestic and industrial kitchen, Food processing industries, Brewery and confectionery industries

Advantages

Microfine Free from presence of ash. Produced without generating temperature at the pulverizing point. The product maintains high drug and spice values. The process of production prevents evaporation of oil during pulverization.

Environmental Aspects

Cleaner production

Development Status

Commercial prototype

Transfer Terms

Turnkey

Target Countries

India

Contact

Innova Reserach Centre Pvt Ltd
Ochanthuruth, Kochi, 682508, India

Nanoparticle for drug delivery

The technology suggests a sustained-release nanoparticle composition composed of a copolymer of an N-alkylacrylamide, a vinyl monomer, and a polyethylene glycol conjugate for preventing or treating a disease or a condition. The said nanoparticle composition further contains a therapeutic agent such as an antibiotic, anti-restenotic agent, anti-proliferative agent, anti-neoplastic, chemotherapeutic agent, cardiovascular agent, anti-inflammatory agent, immunosuppressive agent, or anti-tissue damage agent. Such nanoparticle compositions generally have a diameter in the range of 20–100 nm and are used locally for the prevention or treatment of diseases or conditions. The said technology also suggests a method for using a sustained-release nanoparticle composition for preventing or treating a disease or condition. The preclinical studies of this technology have been performed on animal model (rat).

Area of Application

Medical industry

Advantages

The technology can be used for delivery of various pharmaceuticals agents. Provides efficacious treatment. It is an adjunct to the existing approaches. Nanoparticle prolonged the release of drugs and thus make it bio-available for longer duration.

Development Status

Laboratory model

Legal Protection

Patent

TECHNOLOGY OFFERS

Transfer Terms

Technology licensing

Target Countries

India

Composite anti-retroviral drug and its process

The present technology provides a pharmaceutical composition of anti-retroviral drugs having improved dissolution, content uniformity, and bulk properties for use in pharmaceutical field and also a method of preparation of the product. It relates to a process of preparing pharmaceutical composition with improved process and product performance. Tablets and capsules are the most preferred dosage forms by the pharmaceutical scientists and clinicians because of accurate dosing, good patient compliance, manufacturing ease, and low cost of production. Subsequently, in this technology spray drying is used for preparing the pharmaceutical composition.

Area of Application

Medical diagnostics

Advantages

Process description and method of preparation of a pharmaceutical composition with improved process and product performance. A pharmaceutical composition comprising a coprocessed product of nevirapine and stavudine. Single processing step Enhanced dissolution rate of nevirapine. Cost-effective production Improved content uniformity of stavudine. Enhanced oral bioavailability.

Development Status

Laboratory model

Legal Protection

Patent in progress

Transfer Terms

Technology licensing

Target Countries

India

For the above two offers, contact

SkyQuest Technology Consulting Pvt. Ltd.
501, Krishna Complex, Opp. Devashish School, Bodakdev
Ahmedabad
India

Novel transducer matrix and its application in biosensors

The principal objective of the present invention is to provide a process for the synthesis of nanostructured conducting polymer (NSCPs) by using structure directing agents. In addition, this invention also provides a process to develop a nanostructured conducting polymer with high electrical conductivity. Another objective of the present

invention is to use the synthesized nanostructured conducting polymers as a transduction matrix for the development of biosensor. Yet another objective of the present invention is to provide a method for the development of optical biosensor by using synthesized nanostructured conducting polymers as a transduction matrix. Last, but not the least, this invention also intends to provide an optical biosensor having possible application in the testing of biological samples. High Surface Area of nanostructured conducting polymer-enhancing enzyme loading • Bio-compatibility • Dimensional compatibility with biomolecules. • Film forming ability

Area of Application

An optical glucose biosensor has a potential application in the testing of biological samples.

Environmental Aspects

Bio-degradable and environmentally friendly

Development Status

Laboratory model

Legal Protection

Patent

Transfer Terms

Consultancy, Technical services, Technology licensing

Tea catechins as anti-aging compounds

The present invention relates to the preparation of consumable composition for oral administration that contains tea catechins. The composition prepared by the process of this invention is useful in providing controlled release of catechins contained therein. In a preferred embodiment of the present invention, consumable composition containing tea catechins dispersed therein is provided.

Area of Application

Application includes anti-aging agents

Environmental Aspects

Bio-degradable and environmentally friendly

Development Status

Laboratory model

Legal Protection

Patent

Transfer Terms

Consultancy, Technical services, Technology licensing

Bacterial lipase and its application in food industry

We could offer a technology to synthesize bacterial lipase that has potential applications in the food industry. The present invention provides an extra cellular bacterial lipase from *Pseudomonas mendocina* M-37 (MTCC 7054) with high stability and substrate specificity. The bacteria were iso-

TECHNOLOGY OFFERS

lated from oil industry effluent showing high activity on olive oil. The substrate specificity of *Pseudomonas mendocina* M-37 lipase shows that the lipase was especially more active towards the synthetic triglycerides and fatty acids esters that possesses butyryl group like benzyl butyrate (1,120% relative activity), tributyrin (744%), and amyl butyrate (550%), respectively. The stability of lipase in organic solvents offers advantages for ester synthesis. Exposure of M-37 lipaectanol (215%).

Area of Application

The bacterial lipase showing high activity in organic solvents and substrate specificity for butyrate esters has possible significant applications in food industry for ester synthesis. The esterification reactions in food industry are carried out in organic solvents and uses butyrate substrates. *Pseudomonas mendocina* lipase has possible applications in synthesis of flavor and fragrance esters; for organic synthesis and modification of fats and oils

Advantages

Pseudomonas mendocina lipase possessing high stability in organic solvents, high substrate specificity mainly for butyrate esters has possible significant applications in food industry for ester synthesis.

Environmental Aspects

Bio-degradable and environmentally friendly

Development Status

Laboratory model

Legal Protection

Patent

Transfer Terms

Consultancy, Technical services, Technology licensing

For the above three offers, contact

Amity University Uttar Pradesh, Sector-125, Noida
Distt Gautam Buddha Nagar 201303
India

Chitin and chitosan

Chitin and chitosan are important by-products from the shell of shellfishes. Chitin is the most important organic constituent of the exoskeletal material of invertebrates and the important economical source of this material is the shrimp processing industry. Chitin and its derivatives, chitosan, find various industrial applications like biotechnology, food processing, pharmacy, and medicine.

Area of Application

Various industrial applications like biotechnology, food processing, pharmacy, and medicine.

Advantages

Chitin and its derivatives, particularly chitosan, find industrial application in various fields namely flocculation, paper making, textile printing and sizing, ion exchange chromatography, removal of

metal ions from industrial effluents, manufacture of pharmaceuticals and cosmetics, and as an additive in food industry.

Environmental Aspects

Waste utilization

Development Status

Pilot plant, Fully commercialized

Transfer Terms

Consultancy, Technology licensing

Contact

Central Institute of Fisheries Technology, CIFT Junction,
Matsyapuri, Willingdon Island,
Cochin 682029
India

Prevention of gasoline evaporation & fire risk at gas station

The gas leaking in manhole tank while it is loaded could be solved with good quality instruments. The leaking occurred when the gas is loaded and unloaded from the manhole tank. This would cause loss for the company. The instruments which have been setting at gas station are able to prevent gasoline evaporation, water, and fire inside the tank. Besides that, it is also prevent dropped gas around the tank. The technology used has copyright and also proved in some laboratory test, so that the quality of the product is better than any other products. Therefore, with refining in product, facility, management, and also marketing, it would develop the company. Another benefit which can be got is healthier environment, time and power saving because of the strainer in pump is not cleaned too often. Besides that, the gas loaded pump will work lighter. That could prevent loss caused by gas evaporation.

Area of Application

Industry

Environmental Aspects

Cleaner production, Energy efficiency

Development Status

Laboratory model

Legal Protection

Patent

Transfer Terms

Joint venture

Contact

Indonesian Network for Technology-Industry Matching (INTIM),
Gedung BPPT 1, Lt. 21 Jl. MH. Thamrin no. 8
Jakarta 10340
Indonesia

Sawdust operated baking oven

The National Engineering Research and Development Centre (NERDC) of Sri Lanka has developed the baking oven which can be fueled on sawdust as the energy source. Presently the operational cost of the baking oven operated by the L.P. Gas as energy source is very expensive as the L.P. Gas in the world market is very expensive. Presently the sawdust is the waste of agricultural sector as well as the industrial sector. By using the sawdust as energy the environmental pollution can be minimized. Technology transfer can be the offering of full package and the technical consultant services.

Area of Application

Food industry, energy, baking industry

Advantages

1. Reduce the usage of firewood as well as L.P. Gas
2. Reducing the area required for baking process
3. low cost
4. hygienically good food can be obtained as there is no flue gas contamination

Environmental Aspects

Waste utilization, Energy efficiency

Development Status

Fully Commercialized

Legal Protection

Patent

Technical Specifications

SIZE- 4' × 4' × 4' for 64 loaves of bread per batch - 2' × 2' × 2' for 16 loaves of bread per batch TEMP- 300 c chimney-4' energy as sawdust

Transfer Terms

Consultancy, Technology licensing, Equipment supply, Turnkey

Contact

National Engineering Research and Development Centre of Sri Lanka
2P/17B, IDB Industrial Estate, Ekala,
Ja-Ela, Sri Lanka

Solar chimney for electricity generation

Thai university offers solar chimney technology for electricity generation. By this technology, solar energy is converted into wind energy that is used by a turbine generating electric power.

Area of Application

Large-scale electricity generation

Advantages

Cheap and clean renewable energy generation technique

TECHNOLOGY OFFERS

Environmental Aspects

Energy efficiency

Development Status

Pilot plant

Transfer Terms

Consultancy, Others

Contact

Mr. Tawit Chitsomboon, Suranaree University of Technology
Muang District, Nakornratchasim 30000
Thailand
Tel: (6244) 22 4264, Fax: (6244) 22 4224

Wind turbine

Innovative designed small wind turbine combined with aerodynamic design able to operate from low wind speed and able to withstand stormy wind with self-regulated design as functions of the main blade. The rots and moving parts are constructed with light-weight aluminum. The unique vertical-axis design ensures a robust performance in the urban environment, where wind speed is lower and wind directions change frequently. Natural Energy wind turbines operate in low wind speed (3 m/s), quiet operation, unlimited high wind performance. It is the development for area with low and medium wind speed. We deliver three main models: 500W, 1,000W, and 2,000W. Moreover, we also offer VT2000 which is used for water mechanical pumping.

Area of Application

Natural Energy Industry

Advantages

Aero dynamic design -Light aluminum material; Low wind performance; self-start; Unlimited high wind performance (storm); self-regulated; Quiet operation; Simple structure-minimized moving parts

Environmental Aspects

Cleaner production, Waste utilization, Energy efficiency, Systems integration

Development Status

Fully commercialized

Legal Protection

Trade Mark, Patent, Copyright

Transfer Terms

Equipment Supply, Others

Target Countries

Thailand

Contact

Natural Energy Co., Ltd
17th Floor, S.P. Building 388 Phaholyothin Road Phayathai
Bangkok 10400, Thailand