

PATENT SEARCH REPORT

Our Ref. No. [Job No.] : NSB/NN/LA/10.01

Your Ref. No. :

Title : SUGAR HYDROLYSIS OF KENAF FIBRE FOR UTILIZATION IN LACTIC ACID PRODUCTION

Herewith, are the results of the search conducted for the above subject matter.

Category	Document details, with indication, when appropriate, of relevant passages	Relevant to Claim	CLASSIFICATION (Int. Cl)
A	<p>1. WO 2009135898: FERMENTATION OF A LIGNOCELLULOSE-CONTAINING MATERIAL</p> <p>Applicant: NOVOZYMES , COFCO LTD., REN, HAIYU HUANG, HONG ZHI</p>	NA	-
Y	<p>2. US 20070031919: TREATMENT OF BIOMASS TO OBTAIN A TARGET CHEMICAL</p> <p>Inventors: DUNSON; JAMES B. JR.; TUCKER; MELVIN P. III; ELANDER; RICHARD T.; HENNESSEY; SUSAN MARIE</p>		CORRESPONDING SEARCH REPORT
Y	<p>3. US 20070141660: METHODS FOR PRODUCING END-PRODUCTS FROM CARBON SUBSTRATES</p> <p>Inventors: CHOTANI; GOPAL K.; KUMAR; MANOJ; PUCCI; JEFF P.; SANFORD; KARL J.; SHETTY; JAYARAMA K.</p>		DOCUMENTS SEARCHED
Y	<p>4. US 20100196980: METHODS FOR PRODUCING FERMENTATION PRODUCTS</p> <p>Applicant: NOVOZYMES</p>		<p>√ WIPO year : 1978 to 13 Aug 2010</p> <p>√ USPTO year : 1976 to 13 Aug 2010</p> <p>TECHNICAL FIELDS SEARCHED/KEYWORDS</p> <p>LACTIC ACID, BACTERIA, LACTOBACILLUS RHAMNOSUS, FERMENTATION, BIOMASS, LIGNOCELLULOSE</p> <p>(either individually or in combination)</p>
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : Relevant if taken alone</p> <p>Y : Relevant if combined with another cited document</p> <p>A : Technological background</p>		<p>DATE : 13 AUGUST 2010</p> <p><i>Atikah Mohtar</i></p> <hr/>	
<p>PAGE 1 of 1</p>		<p>Name: Atikah Matlina Mohtar Position: Patent Executive</p>	

We do not accept any responsibility or liability for any consequences should more relevant records be found. This is because the records and databases we searched are not comprehensive of all the possibly relevant prior art, the accuracy of the databases we searched is not guaranteed and because the method we used (i.e. using keywords) may not locate all relevant records.

WRITTEN OPINION:

THIS OPINION CONTAINS INDICATIONS RELATING TO THE FOLLOWING ITEMS:

1. BASIS OF THE OPINION
2. REASONED STATEMENT UNDER SECTION 12 OF MALAYSIAN PATENT ACT WITH REGARD TO NOVELTY, INVENTIVE STEP OR INDUSTRIAL APPLICABILITY, CITATIONS AND EXPLANATIONS SUPPORTING SUCH STATEMENT.

REFERENCES ARE MADE TO THE FOLLOWING DOCUMENTS:

DOCUMENT D1: **WO 2009135898**

DOCUMENT D2: **US 20070031919**

DOCUMENT D3: **US 20070141660**

DOCUMENT D4: **US 20100196980**

DOCUMENT D1 disclosed that (cf. entire document) the present invention relates to a process of fermenting a hydrolysed pre-treated lignocellulose-containing material to produce a fermentation product.

DOCUMENT D2 disclosed that (cf. entire document) the present invention relates to target chemicals were produced using biocatalysts that are able to ferment sugars derived from treated biomass. Sugars were obtained by pretreating biomass under conditions of high solids and low ammonia concentration, followed by saccharification.

DOCUMENT D3 disclosed that (cf. entire document) the present invention provides means for the production of desired end-products of in vitro and/or in vivo bioconversion of biomass-based feed stock substrates, including but not limited to such materials as starch and cellulose. In particularly preferred embodiments, the methods of the present invention do not require gelatinization and/or liquefaction of the substrate.

DOCUMENT D4 disclosed that (cf. entire document) the present invention relates to a methods for producing a fermentation product from a lignocellulose-containing material comprising i) pre-treating lignocellulose-containing material; ii) hydrolysing pre-treated lignocellulose-containing material; iii) fermenting using a fermenting organism; wherein fermentation is initiated and carried out at: a) a fermentation organism cell count in the range from $10 \cdot 10^{10}$ cells per L fermentation medium; or b) a fermentation organism concentration in the range from 2-90 g dry weight fermenting organism per L fermentation medium.

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ANALYSIS OF NOVELTY

The present invention relates to a biomass (kenaf fibre) that can be hydrolyzed to produce lactic acid using bacteria *Lactobacillus Rhamnosus* as fermenting organism. The above cited prior art **D1** defines the general state of the art whereas **D2** to **D4** seem to have particular relevance to the present invention. **D4** disclosed in its detailed description of the invention whereby chemical pre-treatment using sulfuric acid is preferred, hydrolysis of lignocellulosic materials and fermentation process using fermenting organism (preferred bacterial fermenting organism include Strains of *Lactobacillus*). However, **D4** disclosed lignocellulose-containing material is derived from corn stover, corn fiber, hard wood, soft wood, cereal straw, switch grass, Miscanthus, rice hulls, municipal solid waste, industrial organic waste, office paper, or mixtures thereof. Therefore, the present invention seems to be novel but lacks an inventive step.

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