Biotechnology-2014 Biodegradation performance of phenol by free and alginate entrapped cells of Haloarcula strain D21, an extremely halophilic bacterium isolated from a solar salte...

CONFERENCE PAPER · JUNE 2014

DOI: 10.4172/2155-952X.S1.029

4 AUTHORS, INCLUDING:

Salima Kebbouche-Gana

University M'Hamed Bougara of Boumerdes

39 PUBLICATIONS **50** CITATIONS

SEE PROFILE

Mohamed Lamine Gana

Sonatrach

21 PUBLICATIONS **41** CITATIONS

SEE PROFILE

Souad Khemili

Université Libre de Bruxelles

8 PUBLICATIONS **31** CITATIONS

SEE PROFILE

J Biotechnol Biomater 2014, 3:5
http://dx.doi.org/10.4172/2155-952X.S1.029

OMICS Group Conferences
Accelerating Scientific Discovery

5th World Congress on
Biotechnology

June 25-27, 2014 Valencia Conference Centre, Valencia, Spain

Enhancedoral bioavailability and efficacy of recombinant human insulin entrapped in solid lipid nanoparticles

M J Ansari, M KAnwer, SJamil, R I Al-Shdefat, B E Ali and **M N Ansari**
Salman Bin Abdulaziz University, Saudi Arabia

Colloidal drug delivery systems have shown to enhance oral bioavailability of proteins and peptides. The aim of this work was to develop and evaluate an efficient solid lipid nanoparticle (SLN) carrierfor oral delivery of insulin. Insulin loaded SLN were prepared by double emulsion technique, employing Dynasan 114 as lipid phase and soy lecithin and polyvinyl alcohol as primary and secondary emulsifier respectively. The particle size and zeta potential measured by photon correlation spectroscopy (PCS) were 91±6.12 nm, -36 mV±2.3mV respectively. SLN observed by scanning electron microscopy (SEM) showed extremely spherical shape. The entrapment efficiency (EE%) and drug loading capacity (DL%) determined with high performance liquid chromatogram (HPLC) were 86.53±0.7% and 6.11± 0.8%, respectively.Insulin loaded SLN exhibited sustained release in pH 7.4 phosphate buffer and shown to protect insulin from enzymatic degradation *in vitro* in presence of pepsin and trypsin. The biological activity of insulin loaded SLN was estimated by enzyme-linked immunosorbant assay and in vivo using Wistar diabetic rats after oral administration of insulin-loaded SLN to diabetic rats, and a considerable hypoglycemic effect was observed as compared to pure insulin. Insulin loaded SLN showed better protection of insulin from harsh gastro intestinal environment than the insulin solution as evident from Cmax and AUC 196.4 µIUml-1and 236.5 µIU. hr.ml-1versus 16.4 µIUml-1and 36.6 µIU.hr.ml-1only). The relative pharmacokinetic bioavailability of insulin was enhanced approximately 7 times of pure insulin solution when loaded in SLN (11.4% versus 1.7% only).

javedpharma@gmail.com

Biodegradation performance of phenol by free and alginate entrapped cells of *Haloarcula* strain D21, an extremely halophilic bacterium isolated from a solar saltern (Ain Salah, Algeria)

Kebbouche-Gana S[1], **Akmouci- Toumi S**[1], **Gana M L**[2] and **Khemili S**[1]
[1]Université M'Hamed Bougara de Boumerdes, Algérie
[2]Sonatrach, Algérie

Immobilization is a general term that describes many different forms of cell attachment or entrapment. These different forms include encapsulation of cells in a polymer-gel and entrapment in a matrix. The Advantages of these techniques are to reduced possibility of inoculum contamination during storage, transport and application. So, beads are non toxic, biodegradable and non-polluting and can be produced in large quantities, stored for extended periods. Moreover, phenols and phenolic compounds are widely distributed as environmental pollutants due to their common presence in the effluents of many industrial processes, including oil refineries, ceramic plants, coal conversion process, phenolic resins, pharmaceutical and food Industries. The aim of this study was to compare the biodegradation performance of phenol by using free and encapsulated cells of *Haloarcula* strain D21 isolated from crude oil contaminated saline water collected at Ain Salah in Algeria. Batch experiments were carried out in order to obtain the maximum phenol degradation rates by analyzing the influence of the immobilization in calcium-alginate gel beads on biodegradation performance.

Biography

Kebbouche-Gana S has obtained PhD from Polytechnic National School University and postdoctoral studies from University of Sciences and Technologies,HouariBoumediene, Algiers (Algeria). She is the Head of team in Laboratory: Microbial biodiversity and biotechnology of saline and oil watery ecosystems (Bmbeap). She has published more than 8 papers in reputed journals.

kebbouchesalima@yahoo.fr