



Industrial Consultancy & Sponsored Research (IC&SR)

Process for preparation of stable, colloidal suspension of micronized water insoluble β -glucan and its application thereof.

IITM Technology Available for Licensing

Problem Statement

- Current methods for preparing water-insoluble β -glucan **lacks efficiency and scalability** and are very **time-consuming**.
- Traditional method for aggregation of β -glucan particles **reduces solubility & effectiveness in immune stimulation**.
- Existing approaches for micronization involves **chemical modification**.
- Hence, there is a need for a **method to produce stable, colloidal suspensions of micronized β -glucan** for enhanced immune-stimulant activity.

Technology Category/ Market

Category: Micro & Nano Technologies

Industries: Nutraceuticals, Aquaculture, Pharmaceutical, Food and Beverage, Cosmetics

Applications: Immune stimulation, Drug delivery, Animal feed supplements, Health supplements, Disease prevention in aquaculture, Cosmetic formulations

Market: The global β -glucan market size is estimated to grow from **USD 501 Mn in 2023** to **USD 734 Mn by 2028**, representing **7.9% CAGR** during the forecasted period **2023-2028**.

Technology

The instant technology disclosure refers to a novel approach for **preparation of stable colloidal suspensions of micronized water-insoluble β -glucan**, with diverse applications.

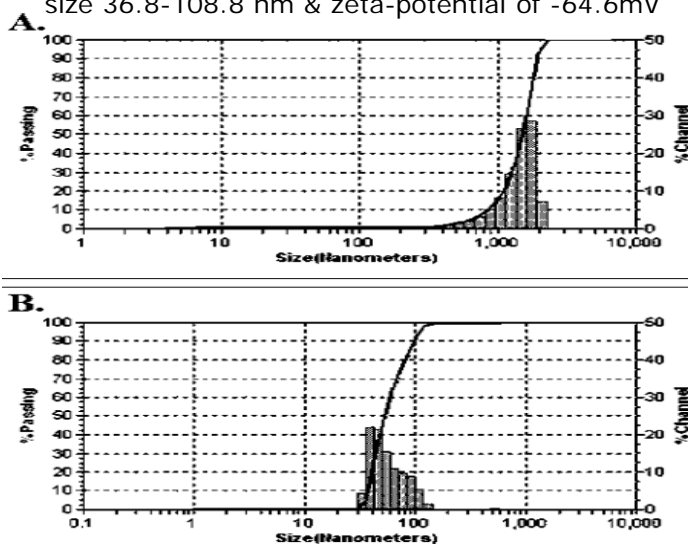
The disclosure involves a **two-step process**:

- Dried yeast is **dispersed** in distilled water, **centrifuged**, **treated** with NaOH and HCl, **boiled** and **washed** until **pH neutralization**, resulting in a **carbohydrate-rich fraction containing β -glucan**.
- The β -glucan particles are **micronized** by homogenizing larger particles under **selective pressures**, achieving a **concentration of 50-100mg/ml on a dry basis**. This enhances absorption in the intestine and improves binding with macrophages, **enhancing immune-stimulant activity**.

FIG. 1 illustrates a graphical representation of **Dynamic Light Scattering (DLS)** of

a) extracted β -glucan of particle 638 nm-2000 nm and zeta-potential of -0.48mV

b) Micronized β -glucan particles in nanometer size 36.8-108.8 nm & zeta-potential of -64.6mV



Key Features / Value Proposition

- **Cost-effective & scalable method for large-scale production.**
- **Retention of natural β -glucan properties** without altering its structure.
- **Sustainable two-step extraction process** from brewer's yeast.
- **Formation of micronized water-insoluble β -glucan particles without chemical modification.**
- **Homogenization under selective pressures** to achieve **nanometer-sized particles**.
- **Stable colloidal suspension with enhanced immune-stimulant activity.**
- **Improved absorption and binding** with macrophages for potent immune stimulation.

Intellectual Property

IITM IDF No: **1890**; IN IP No: **401089 (Granted)**

TRL (Technology Readiness Level)

TRL - 4, Experimentally validated in lab.

Research Lab

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