

(54) Title of the invention : Method for producing a fermented beverage infused with medicinal plant extracts and pumpkin seed extract

(51) International classification	:C12G3/02, A23L2/38	(71)Name of Applicant : <b>1)Swami Vivekananda University</b> Address of Applicant :Telinipara, Barasat - Barrackpore Rd, Bara Kanthalia, Kolkata, West Bengal 700121, India. -----
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Filing Date	:NA	<b>Address of Applicant : NA</b>
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## (57) Abstract :

The present invention relates to a novel method for producing a fermented beverage infused with medicinal plant extracts and pumpkin seed extract. The process involves (i) extracting bioactive compounds from selected medicinal plants, (ii) preparing a pumpkin seed extract, and (iii) blending both extracts with a sucrose-based decoction, followed by inoculation with *Lactobacillus acidophilus* and controlled fermentation at  $25 \pm 1^\circ\text{C}$ . The beverage, named OLIVA, demonstrates potential health benefits, including gut microbiome enhancement and Type 2 Diabetes Mellitus prevention. The fermentation process is optimized through physicochemical monitoring, qualitative biochemical assays, and in vitro digestion simulations. A study on a diabetic animal model further evaluates its efficacy in improving insulin sensitivity and  $\beta$ -cell function. This natural, cost-effective formulation offers a functional food alternative for metabolic health management.

No. of Pages : 17 No. of Claims : 10