

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :07/04/2024

(21) Application No.202431028476 A

(43) Publication Date : 19/04/2024

(54) Title of the invention : Transformation of Dairy By-Product into Sustainable Biodegradable Material

(51) International classification :C08L0089000000, A01G0022000000, C08L0101000000, A47G0021180000, A01N0037020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention pertains to a method for transforming dairy by-products into a sustainable biodegradable material, specifically focusing on the utilization of casein found in milk. Referred to as casein plastic, the resulting material is environmentally friendly and can be molded into diverse shapes. Plastics, pervasive in daily life, often contribute to environmental concerns due to their synthetic nature. This invention addresses the need for sustainable alternatives by leveraging the inherent properties of casein proteins in milk. The method involves heating milk and introducing an acid, such as white vinegar, to induce polymerization, leading to the formation of curds. These curds are then processed into a malleable casein polymer, herein termed casein plastic. The material retains the natural biodegradability of casein, presenting an eco-friendly alternative to traditional plastics. The invention extends to the creation of a polymerization kit, enabling individuals to replicate the process, emphasizing its educational potential. Additionally, shaped and dried products, molded from the resulting casein plastic, exhibit durability and biodegradability. In summary, the disclosed method offers a practical and sustainable solution for repurposing dairy by-products, contributing to the reduction of environmental impact associated with conventional plastic materials.

No. of Pages : 8 No. of Claims : 10