

MICROFLUIDIC BIOMIMETIC FIBER FOR PRODUCING CELL CULTURED MEAT, AND PREPARATION METHOD THEREFOR AND USE THEREOF

ABSTRACT

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The present invention discloses a microfluidic biomimetic fiber for cultured meat production and a preparation method therefor and use thereof. The microfluidic biomimetic fiber has a shell-core structure; and an outer shell of the microfluidic biomimetic fiber is formed by cross-linking a polymer solution with cell non-adhesion, and an inner core wrapped by the outer shell is a hydrogel solution mixed with a seed cell. The present invention respectively introduces an inner phase fluid and an outer phase fluid into inner and outer phase channels of a microfluidic device, enables the two phase fluids in the channels of the microfluidic device to form a stable laminar flow structure by adjusting the flow velocities of the inner and outer phases, and extrudes same from a device outlet to obtain the biomimetic fiber. The biomimetic fiber is constructed on the basis of the microfluidic technology. The preparation method is simple, rapid in molding, and mild in reaction. The prepared biomimetic fiber can be used in the cultured meat production after being cultured, and seed cells in the biomimetic fiber are directionally arranged, migrate, and are grown in a fused manner in a fiber carrier, such that the differentiation capacity of the seed cells is significantly improved, the synthesis of muscle-related proteins is increased, and the production efficiency of the cultured meat is improved.

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Fig. 1 for publication.