

MICROFLUIDIC 3D PRINTING TECHNOLOGY-BASED CULTURED MEAT PRODUCTION DEIVCE AND USE THEREOF

ABSTRACT

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Disclosed are a microfluidic 3D printing technology-based cultured meat production device and a use thereof. The device comprises a printing nozzle, a printing moving system, a loading platform, a sample injection system and a base. The printing moving system is disposed on the base and is composed of a plurality of movable optical axes. The printing nozzle is disposed on a
10 movable optical axis, the sample injection system is connected to the printing nozzle, and the printing nozzle is a micro-fluidic chip. The present invention is based on microfluidic 3D printing, where biological ink is extruded by means of a microfluidic chip to form printed fibers that, under the drive of the printing moving system, are stacked for formation to achieve single-step construction of a piece of three-dimensional tissue having tissue anisotropy, which is used for
15 cultured meat production. The described device is easy to operate and offers rapid formation; and the structure, quantity and the like of microfluidic chips may be designed and flexibly replaced or adjusted as needed. Meanwhile, seed cells are directionally arranged within the fibrous basic structure of printed three-dimensional tissue and are further migrated and fused, thereby enhancing the differentiation and maturation of seed cells, as well as the efficiency of synthesizing relevant
20 proteins.

Fig. 1 for publication