Soy protein could help turn lab-grown steaks into realistic beef alternatives

Currently scientists have only produced relatively tiny nuggets of lab-grown meat, which can imitate ground beef for use in hamburgers or meatballs. However, to grow larger structures that could mimic products such as steaks, edible 3-D scaffolds are needed to provide mechanical support to developing cells. These scaffolds would imitate the honeycomb-like extracellular matrix in which animals' muscles grow.

Biomedical engineer Shulamit Levenberg at the Technion-Israel Institute of Technology in Haifa …. experimented with a 3D scaffold made from textured soy protein, an inexpensive edible byproduct of soybean oil processing that was invented in the 1960s. This spongy material is often an ingredient in meat substitutes due to its fibrous meat-like texture and high protein content, and the researchers reasoned that its porous nature could help it provide anchor points on which cells could attach and proliferate.

"Using soy as a scaffold is a novelty," said tissue engineer Mark Post, chair of physiology at Maastricht University in the Netherlands …. The fact that it's a food-grade material is also good from a regulatory perspective."

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Volunteers who tested the product after cooking said that its taste, aroma and texture were pleasant and typical of real meat.

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