

Serum-free media for cultivated meat

The development of serum-free media is not a true bottleneck or concern for the cultivated meat industry. Serum-free media formulations for the growth of animal cells have existed for decades, and many formulations tailored for cells used in cultivated meat production have been described by research groups in academia and industry. As of March 2025, six companies have received approval for serum-free production of cultivated meat from federal regulators in four countries or regions.

In real-world products

- In March 2025, Mission Barns received a green light from the U.S. FDA for its cultivated pork fat product. The product is manufactured without the use of serum and the first sale is pending.
- In April 2024, Vow received regulatory clearance from the Singapore Food Agency for its cultivated quail product produced without serum, where it remains on sale to consumers. In April 2025, Vow received regulatory clearance from the Food Standards Australia New Zealand for the same product. The first sales in Australia or New Zealand are pending.
- In January 2024, Israel's Ministry of Health approved cultivated beef produced by the company Aleph Farms. The product is made without the use of any serum. The first sale is pending.
- In January 2023, GOOD Meat's cultivated chicken product was granted approval by the Singapore Food Agency for serum-free production. The company also received clearance for its cultivated chicken product in the United States, where it plans to apply for an amendment for serum-free media production. The company is currently selling products in Singapore, but sales in the United States are paused.
- In July 2024, Meatly was granted clearance by the UK Food Standards Agency, the Department for Environment, Food, and Rural Affairs, and the Animal and Plant Health Agency for its cultivated pet food product. The product is made without any serum or proteins. The first sale occurred in February 2025.
- The documentation submitted to the United States FDA by UPSIDE Foods, which has been greenlit for sale, describes cultivated chicken products produced both with and without the use of serum, demonstrating that they too have managed to replace serum in their production processes. Sales are currently paused in the United States.

In patents and publications

- [Pasitka, 2023](#): This paper describes the serum-free production of cultivated chicken from the company Believer Meats.
- [Pasitka, 2024](#): This paper describes the fully animal-component free media for cultivated chicken production at \$0.63/L from the company Believer Meats
- [Kolkmann, 2020](#); [Kolkmann, 2022](#); [Messmer, 2022](#); [Mitic, 2023](#); [Melzener, 2024](#): These papers describe the serum-free production of cultivated beef and cultivated fat from the company Mosa Meat.
- [Stout, 2022](#): This paper describes a serum-free medium formulation developed by one of the leading academic labs at Tufts University working on cultivated meat. Other academic groups have similarly developed serum-free media for culturing various species ([Skrivergaard, 2023](#); [Zhu, 2023](#); [Dai, 2024](#)) including aquatic animals ([Zhang, 2024](#); [Jozef, 2025](#)).
- Several patents for serum-free media formulations from companies in the industry can be found [here](#).
- Several products for serum-free media culture have been created by B2B companies in the sector: [ClearX9](#), [Proliferum B](#)
- One of the challenges with serum-free media development is ensuring that the performance is as good or better than serum-containing media. According to survey data collected by GFI from over 40 companies in the industry, many companies have reported success in achieving high-performing serum-free media formulations. This is also demonstrated in publications such as [Pasitka, 2024](#). Please see this [full report](#) for more details.

Questions or comments?

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About GFI

The Good Food Institute is a 501(c)(3) nonprofit working internationally to make alternative proteins like plant-based and cultivated meat delicious, affordable, and accessible. GFI advances open-access research, mobilizes resources and talent, and empowers partners across the food system to create a sustainable, secure, and just protein supply. GFI is funded entirely by private philanthropic support.



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