MEAT PRODUCTION FROM MUSCLE STEM CELLS

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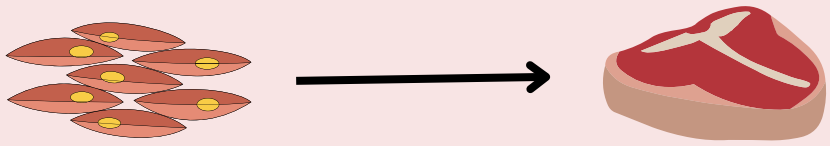
1. INTRODUCTION

The production of cultured meat from muscle stem cells, is a part of cellular agriculture that is expected to have a sustainable and promising future. This discipline is based on biological principles from stem cells in order to produce agri-food products.



2. AIMS

The main objectives of this review are:

- To study the production process of cultured meat.
- To analyse the problems that scientists had faced and see how they had solved them.
- To investigate how the commercialization of cultured meat has been achieved and what future forecast it has.

3. PRODUCTION PROCESS

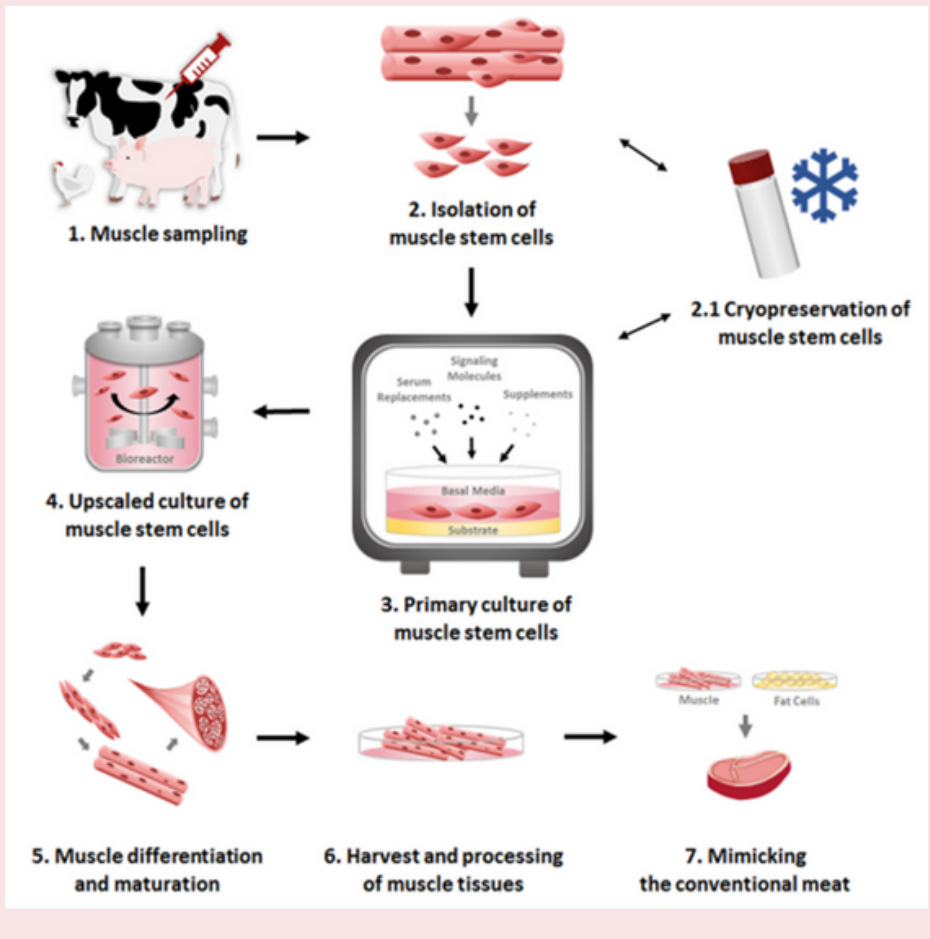


Figure 1. Production steps of cultured meat .
Source: Choi et al. (2021).

4. WHICH CULTURE MEDIUM?

Inconvenience of FBS

- Environmental Pollution
- Does not take into account animal welfare
- It is not sustainable
- The final product (meat) can be variable between batches
- The cost of production is very high.

Solution

The solution to these problems was the development of a new serum-free basal medium that had the same effectiveness of cell proliferation as BFS and that could be carried out in the long term, but to achieve it many years of studies have been needed.

5. COMMERCIALIZATION

- Singapore → ✓
- Israel → FCS ✗
- Countries of the EU → European Commision ✗
- USA → FDA ✓ USDA ✗

6. CONCLUSIONS

- There is no animal abuse in its production.
- Not as many natural resources are needed as in conventional production, therefore, it is more sustainable.
- Regarding the organoleptic characteristics are similar compared to conventional meat products.
- The cost of production is not high and over time it will decrease even more.

7. BIBLIOGRAPHY

Choi, K. H., Yoon, J. W., Kim, M., Lee, H. J., Jeong, J., Ryu, M., Jo, C., & Lee, C. K. (2021). Muscle stem cell isolation and in vitro culture for meat production: A methodological review. *Comprehensive Reviews in Food Science and Food Safety, 20(1)*. https://doi.org/10.1111/1541-4337.12661