

IN VITRO MEAT: UTOPIA OR REALITY?

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AIMS

To express whether the in vitro meat production could be a reality or not by studying:

- The in vitro meat production system
- The opportunity of commercialisation
- The consumer's attitude and acceptance towards in vitro meat product

1. REASONS FOR IN VITRO MEAT PRODUCTION

- ↑ Meat production due to the increasing demand of meat
- Impact of conventional meat production:
 - Greenhouse gas emissions
 - Land use
 - Water use and contamination
 - Animal slaughter

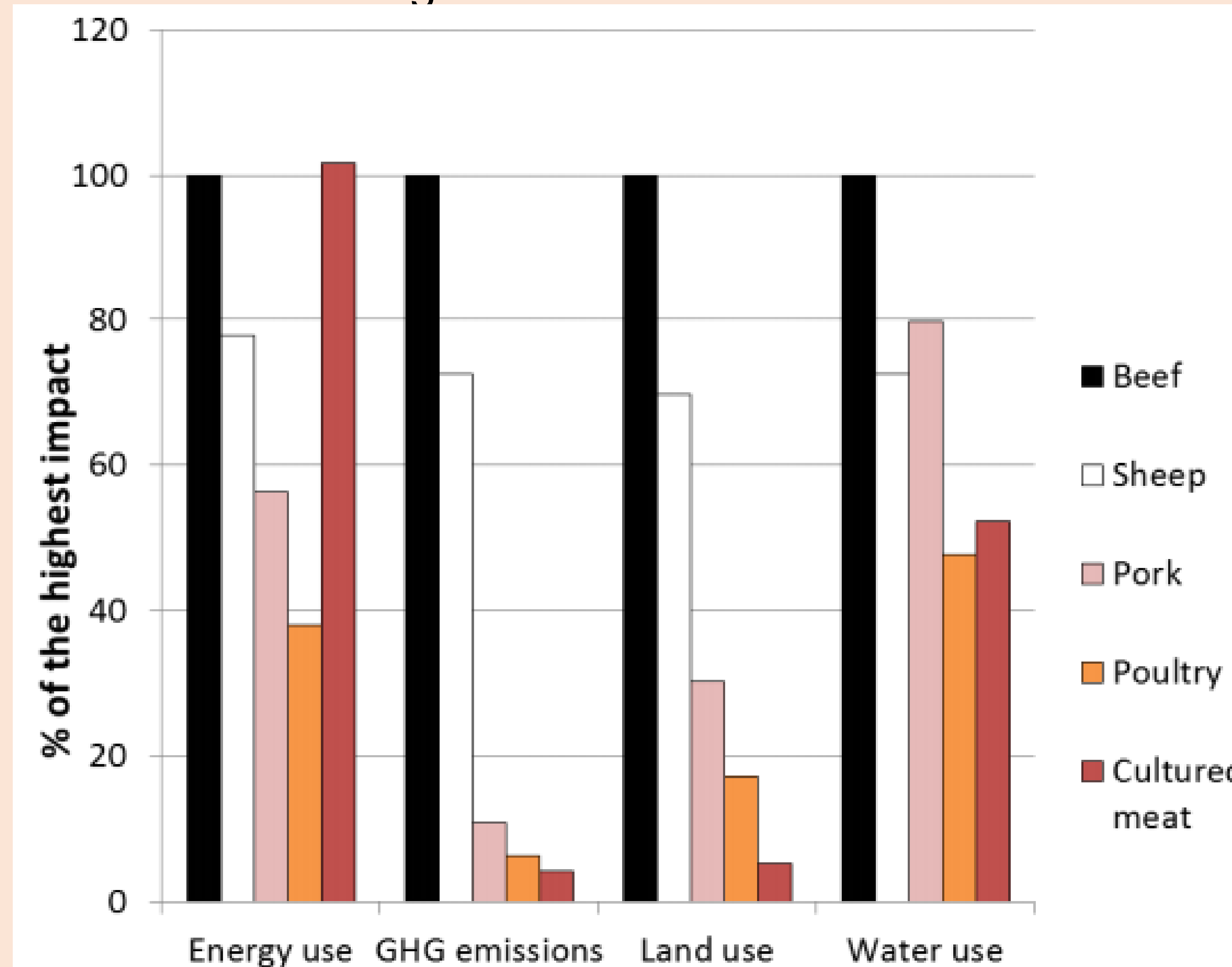


Figure 1: Comparison of environmental impacts of beef, sheep, pork, poultry and cultured meat (Tuomisto and Teixeira De Mattos, 2011)

2. IN VITRO MEAT PROCESS

1. Muscle sample taken by a biopsy
2. **Myosatellite** cells isolation
3. Induce cells to **proliferate** and **differentiate** into muscle fibers
4. Addition of other components and confection the final product

Using a **scaffold** of collagen, inside a **bioreactor** with an adequate **serum-free medium** and stimulation

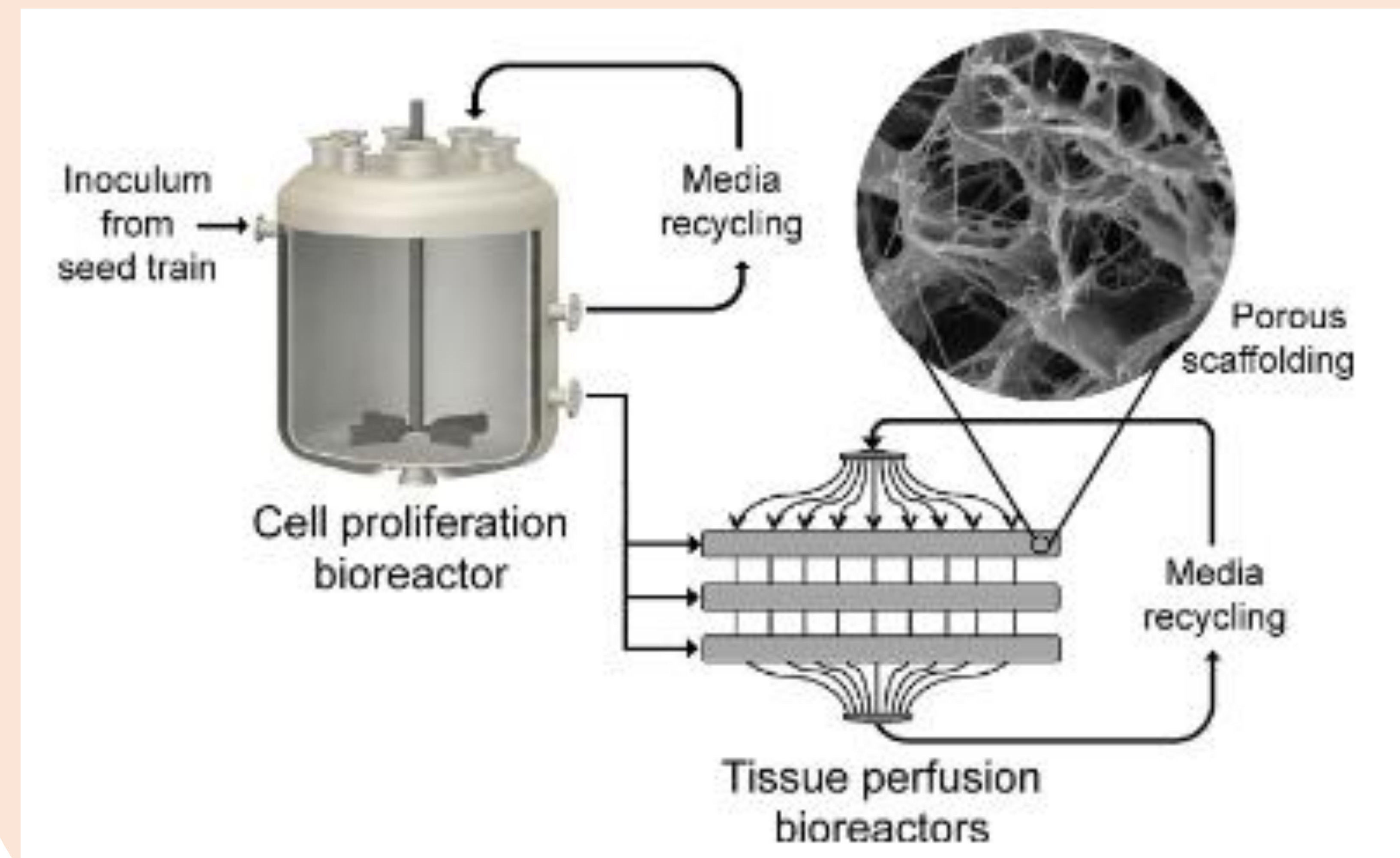


Figure 2: In vitro meat production system (Specht et al., 2018)

3. CHALLENGES

COMMERCIALIZATION

- Solve **large-scale** production problems
- **Reduction of losses and waste** in manufacturing
- Implementation of **regulatory frameworks**

CONSUMER ACCEPTANCE

- Use the **“clean meat”** term instead of “in vitro” or “lab-grown meat”
- **Inform** of the intrinsic characteristics with non technical terms
- Improve **sensorial characteristics**.

4. CONCLUSIONS

- In vitro meat production reduce environmental impacts
- The latest prototypes indicates that there are not fundamental technological limitations to produce in vitro meat
- Further investigation is needed to solve large-scale problems to reduce manufacturing costs

→ In vitro meat products could be thrown into the market in the near future as there are not technical limitations and there is an interest of making it more competitive than conventional meat