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Alternative to foetal bovine serum (FBS) in artificial meat production

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Artificial meat is produced by in vitro culturing of animal cells and is gaining significance due to increasing awareness about the harmful environmental impacts of the meat industry. However, it is cultured using foetal bovine serum (FBS), a rather controversial culture medium supplement in the biological research community. While it serves as an excellent source of nourishment and almost always ensures proper growth of the cells cultured in it, the extraction of FBS is considered unethical. Since FBS is extracted from the foetus of a pregnant cow when it is slaughtered with a cardiac puncture procedure not involving any anaesthesia, the cow foetus is exposed to a lot of distress, which is why many are now avoiding the usage of FBS in cell culture. Additionally, one litre of FBS can cost up to $1000 USD or about Ã¢â€šÂ¹73,602 INR, hence the production of artificial meat is far too expensive for its consumption to be affordable by the general public. This has led to the popularisation of serum-free media which refers to culture media made entirely of animal-free products and provides an excellent ethical alternative to serum-containing media. Serum-free media are also relatively economical to produce than FBS, hence they aid in making the production of artificial meat more affordable and available to the general public. However, FBS protein concentration makes it an ideal medium for the growth of most cell types; therefore, a majority of the artificial meat industries are still dependent on it. Nevertheless, the development of serum-free media ensures a promising future for the development of artificial meat and ultimately towards eliminating the adverse environmental impacts of the meat industry.

Keywords: Artificial meat, Culture media, Serum-free media, Foetal bovine serum, Ethics

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