In vitro meat history, approach, challenges and review

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Imagine, it is claimed that, with ideal conditions and within 2 months; 50,000 tons of meat could be delivered from only 10 muscle cells cultivation. Man-made meat is a contemporary debatable topic, but the history reveals early attempts to cultivate and produce in lab meat. The theory was suggested as early as 1931 while the 1st practical experiment was conducted 40 years later using smooth muscle obtained from inner media and intima of immature guinea pig aorta for 8 weeks in cell culture. Investigations, showed the possibility to produce microfibrils resembling in its composition that same of the intact elastic fiber. After that several approaches were carried out with significant improvement in the process. The 1st lab-grown burger patty was introduced to public was in 2013. Critics stated positive reviews towards the final product. Production of cultured meat requires 3 main stages; the 1st is the selection of starter cells. Those cells should have a rapid proliferation rate. Embryonic and adult stem cells in addition to myosatellite cells and myoblasts are used but myosattelites and myoblasts are commonly used for their end product criteria. The 2nd stage is treating of the growth medium by necessary nutrients and growth factors. This process takes place in bio-reactor. The 3rd stage is scaffolding using the ideal material simulating the animal body normal development. Challenges may include proliferation rate and bioreactor control, palatability of the produced product, selection and cost of the culture medium and using of non-allergenic medium. Cultured meat proved to be more beneficial to human health, economic and environment for many aspects. But still considered as artificial product to consumers which requires additional efforts to convince the consumer to go for it. In addition to the need for a set of regulations to control the production and safety of the product.

Biography
Moataz Ali Hassan is a veterinarian experienced in food safety with over than 10 years contribution to the development of workplace quality by providing specialist advice and assistance on food safety, quality, occupational health and environmental matters. He is currently carrying out veterinary inspection and evaluation of different food commodities arriving at Abu Dhabi’s relevant assigned checkpoints.