CLAIMS

1. A method for enriching cultured meat products, the method comprising:

growing a cell mass in cell culture media;

removing at least a portion of the grown cell mass from the cell culture media;

washing the grown cell mass with a washing media to flush out remaining cell culture media; and

rinsing the grown cell mass with an enrichment media comprising nutrients.

2. The method of claim 1, wherein the washing media and the enrichment media do not comprise growth factors for stimulating the grown cell mass to grow.

3. The method of claim 1, further comprising washing the grown cell mass with the washing media by:

agitating both the grown cell mass and the washing media;

circulating the grown cell mass and the washing media utilizing a pump; and

homogenizing the grown cell mass and the washing media utilizing gas.

4. The method of claim 1, wherein washing the grown cell mass with the washing media comprises flowing the washing media over the grown cell mass and flowing intermediate media comprising increasing concentrations of the enrichment media over time.

5. The method of claim 1, further comprising removing at least a portion of the grown cell mass from the cell culture media based on the grown cell mass completing a threshold proliferation phase.

6. The method of claim 5, wherein the threshold proliferation phase is complete when the grown cell mass reaches at least one of a viable cell density of 3 million cells per milliliter or a packed cell volume of between 1% and 25%.

7. The method of claim 5, further comprising stimulating the completion of the threshold proliferation phase by exposing the grown cell mass to an exogenous regulator.

8. The method of claim 1, wherein washing the grown cell mass further comprises flowing the washing media over the grown cell mass and agitating both the washing media and the grown cell mass.

9. The method of claim 1, wherein the washing media is at a temperature between and including -5C and 45C.

10. A method for enriching cultured meat products, the method comprising:

growing a cell mass in cell culture media;

removing the grown cell mass from the cell culture media; and

washing the grown cell mass with a gradient washing media by decreasing concentrations of washing media and increasing concentrations of enrichment media over time.

11. The method of claim 10, wherein the enrichment media comprises nutrients comprising at least one of vitamins, amino acids, antioxidants, proteins, carbohydrates, or fats.

12. A method for enriching cell based comestible food products, the method comprising:

growing a cell mass in a cell culture media;

flushing the cell mass with a first exchange media; and

flushing the cell mass with a second exchange media.

13. The method of claim 12, wherein:

flushing the cell mass with the first exchange media causes a first set of membrane-permeable solutes to diffuse out of intracellular spaces of cells in the cell mass; and

flushing the cell mass with the second exchange media causes a second set of membrane-permeable solutes to diffuse into the intracellular spaces of the cells.

14. The method of claim 12, wherein the first exchange media is hypotonic relative to the cell culture media.

15. The method of claim 14, wherein the first exchange media comprises a decreasing solute gradient and wherein the first exchange media transitions from a solution having a higher concentration of solutes to a solution having a lower concentration of solutes.

16. The method of claim 15, wherein flowing the first exchange media comprising the decreasing solute gradient across the cell mass provides a gradual change in solute concentrations, whereby osmotic stress on cells of the cell mass is reduced.

17. The method of claim 15, wherein the decreasing solute gradient starts at a solute concentration substantially similar to a solute concentration of the cell culture media.

18. The method of claim 12, wherein the second exchange media is hypertonic relative to the first exchange media.

19. The method of claim 12, wherein the second exchange media comprises an increasing solute gradient and wherein the second exchange media transitions from a solution having a lower concentration of solutes to a solution having a higher concentration of solutes.

20. The method of claim 19, wherein flowing the second exchange media comprising the increasing solute gradient across the cell mass provides a gradual change in solute concentrations, whereby osmotic stress on cells of the cell mass is reduced.

21. The method of claim 19, wherein the increasing solute gradient starts at a solute concentration substantially similar to a solute concentration of the first exchange media.

22. The method of claim 19, wherein the increasing solute gradient includes increasing concentrations of nutrients.

23. The method of claim 22, wherein:

at least a portion of nutrients diffuses into cells of the cell mass; and

at least a second portion of the nutrients adheres to an external surface of the cells.

24. The method of claim 12, further comprising flushing the cell mass with the first exchange media until a first effluent has a composition substantially similar to the first exchange media.

25. The method of claim 12, further comprising flushing the cell mass with the second exchange media until a second effluent has a composition substantially similar to the second exchange media.

26. The method of claim 12, further comprising flushing the cell mass for a flushing time period.