Dottorato di ricerca in Scienze Veterinarie XXXIII CICLO - Anno di corso: 1°
Curriculum: Produzioni animali e sicurezza alimentare

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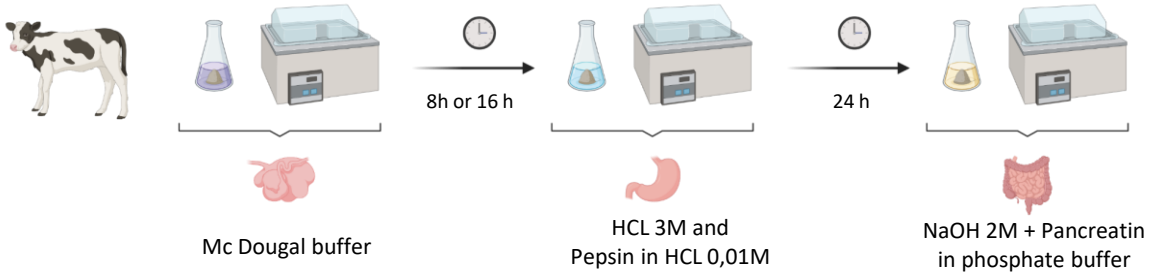
In vitro evaluation of amino acid release from solid lipid microcapsules

AIM OF THE STUDY

The aim of the study was to evaluate the influence of different matrix components on L–lysine amino acid release and bioavailability. L-lysine is an important amino acid for the ruminant diet, because it is often the most limiting amino acid for milk protein synthesis.

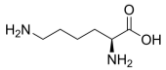
MATERIALS AND METHODS

Solid lipid microcapsules (SLM) were formulated using different lipidic materials as matrix, such as triglycerides or free fatty acids, w/wo emulsifiers. SLM were produced by spray chilling. *In vitro* test were performed in order to evaluate rumen protection and intestinal digestibility.
Analysis were carried out using **Kjeldhal method.**



RESULTS

In vitro analysis show that matrix 51 and 52 do not allow the protection the AA from ruminant environment. For SLMs formulated with triglycerides, a modulation of the release was observed w/wo emulsifier. Results demonstrated that a change in the matrix composition involves a significant variation on L-lysine release.



CONCLUSIONS

The most promising formulation tested is the matrix 50. The composition of matrix 50 allows the strongest rumen protection and the highest percentage of intestinal digestibility of L-lysine.
In conclusion, matrix 50 guarantee a promising bioavailability of L-lysine for ruminant.

FUTURE PROPOSAL

1. Perform *in vitro* test on matrix intended for monogastric.
2. Identify the optimal formulation for the release of hydrophilic compounds.
3. Perform *in vivo* study to verify the release profile of the selected formulation.

REFERENCES

Ross, D.A.; Gutierrez-Botero, M.; Van Amburgh, M.E. Development of an In-Vitro Intestinal Digestibility Assay for Ruminant Feeds. www.scirp.org/%28S%28351jmbntvnsjt1aadkposzje%29%29/reference/ReferencesPapers.aspx?ReferenceID=159208

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