

# Farm animal proteomics 2014

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P u b l i s h e r s

# Colostrum protein uptake in neonatal lambs examined by descriptive LC-MS/MS

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## Introduction

Colostrum is the first source of nutrition in neonatal ruminants, supplying not only nutrients, but having also a fundamental biological function, promoting immunoglobulin transfer from the dam to the newborn (Hernández-Castellano *et al.*, 2014a). Newborn ruminants are hypogammaglobulinemic at birth, as the complexity of the ruminant placenta does not allow a sufficient transfer of immunoglobulins (Ig's) from the dam to the foetus (Lérias *et al.*, 2014). Therefore, newborn ruminants depend entirely on passive immunity transfer from the mother to the neonate, through the suckling of colostrum (Hernández-Castellano *et al.*, 2014b). The aim of this study is to describe the proteomes of sheep colostrum and lamb blood plasma after suckling, using SDS-PAGE for protein separation and in-gel digestion, followed by LC-MS/MS of resulting tryptic peptides for protein identification.

## Material and methods

### Sample collection and preparation

The study was based on individual analysis of plasma samples from 4 single partum lambs (Canarian dairy breed), studied as two experimental groups, as well as two samples from the standard pool of colostrum used for lamb feeding. The experiment took place at the experimental farm of the Veterinary Faculty of the Universidad de Las Palmas de Gran Canaria (Spain). During the experimental period (from birth up to 14 h after birth), the colostrum group (C group) received colostrum feeding at 2 h after birth. The non-colostrum group (NC group) was not fed at 2 h after birth. Blood samples were collected directly before feeding at 2 and 14 h after birth from the jugular vein in 2.5 ml tubes with K-EDTA. Blood was centrifuged at 2,190 g for 5 min at 4 °C and the obtained plasma was frozen at -80 °C until further analysis. Plasma and colostrum samples were analysed at Aarhus University (Aarhus, Denmark). A total of 200 µl from each sample were homogenized with 1