



HAL
open science

Characterization of llama (*Lama glama*) milk proteins

Besma Saadaoui, Leonardo Bianchi, Céline Henry, Guy Miranda, Patrice Martin, Christelle Cebo

► To cite this version:

Besma Saadaoui, Leonardo Bianchi, Céline Henry, Guy Miranda, Patrice Martin, et al.. Characterization of llama (*Lama glama*) milk proteins. 64rd Annual Meeting of the European Federation of Animal Science, Symposium on South American Camelids and other fibre animals, Aug 2013, Nantes, France. hal-02935981

HAL Id: hal-02935981

<https://hal.inrae.fr/hal-02935981v1>

Submitted on 10 Sep 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Characterization of llama (*Lama glama*) milk proteins

**Besma Saadaoui¹, Leonardo Bianchi², Céline Henry³, Guy Miranda², Patrice Martin²
and Christelle Cebo²**

¹Faculté des Sciences de Gabès, cité Erriadh Zrig 6072 Tunisia

²INRA, UMR 1313 Unité Génétique Animale et Biologie Intégrative, F-78350 Jouy-en-Josas, France

³INRA, UMR 1319 MICALIS, Plateforme PAPSSO (Plateforme d'Analyse Protéomique Paris Sud Ouest), F-78350 Jouy-en-Josas, France

Llamas belong to the *Camelidae* family along with camels. While camel milk has been broadly characterized, data on llama milk proteins are scarce. Previously released studies were only limited to the analysis of gross composition of milk (*i.e.* total fat, protein, or lactose content). The objective of this study was thus to investigate the protein composition of llama milk. Data were compared with those from dromedary milk, a closely related species. First, the protein concentration of llama and dromedary milk was determined. Surprisingly, the average value of protein concentration was roughly twice higher in llama milk compared with dromedary milk. Skimmed llama milk proteins were further characterized by a two-dimensional separation technique coupling Reverse Phase High Pressure Liquid Chromatography (RP-HPLC) in the first dimension with sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS-PAGE) in the second dimension. Identification of proteins was achieved using peptide mass fingerprinting. This proven methodological approach allowed us to identify the major proteins in llama milk, namely caseins (α_{s1} -, α_{s2} -, β - and κ -caseins), α -lactalbumin, lactoferrin, lactophorin and serum albumin. Significant quantitative and qualitative differences were observed between camel and llama milk samples.

Finally, we characterized proteins of the Milk Fat Globule Membrane (MFGM), the membrane surrounding fat in milk, in the llama species. The MFGM protein profile from llama was found to be highly similar to the MFGM protein profile from camel milk. Taken together, these data provide for the first time a thorough description of the milk protein fraction from llama, a new-world camelid.