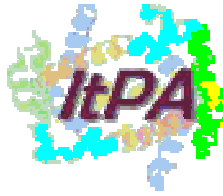




CONSIGLIO NAZIONALE DELLE RICERCHE
DIPARTIMENTO SCIENZE DELLA VITA



Dipartimenti di:

Biochimica Medica, Biologia Medica e Fisica Medica

Biochimica e Biologia Molecolare "*Ernesto Quagliariello*"

A large, circular, semi-transparent image of the Hotel Sierra Silvana, showing its distinctive architecture with a central tower and multiple wings, set against a light blue sky.

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A PROTEOMIC CHARACTERIZATION OF WATER BUFFALO MILK FRACTIONS

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Water buffalo has been studied in relation to the exclusive use of its milk for the manufacture of high-quality dairy products. Buffalo milk presents physicochemical features different from that of other ruminant species, such as a higher content of fatty acids and proteins. We report here a detailed proteomic analysis of buffalo skim milk, whey and milk fat globule membrane fractions. Notwithstanding the poor information available on buffalo genome, identification of protein isoforms corresponding to 72 genes was achieved by a combined approach based on 2-DE/MALDI-TOF PMF and 1-DE/microLC-ESI-IT-MS-MS. Major protein components, i.e. alphaS1-, alphaS2-, beta-, and alpha-lactoglobulin, were characterized for beta-lactalbumin kappa-caseins, post-translational modifications, providing a scientific basis to coagulation/cheese making processes used in dairy productions. Minor proteins detected emphasized the multiple functions of milk, which besides affording nutrition to the newborn through its major components, also promotes development and digestive tract protection in the neonate, and ensures optimal mammary gland function in the mother. Defence against pathogens is guaranteed by an arsenal of antimicrobial/immunomodulatory proteins, which are directly released in milk or occur on the surface of secreted milk lipid droplets. Proteins associated with cell signalling or membrane/protein trafficking functions were also identified, providing putative insights into major secretory pathways in mammary epithelial cells.