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## Role of PTX3 in the immune response to *S. aureus* intramammary infection

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Mastitis is an inflammation of the mammary gland commonly caused by bacterial infection. Regardless of the extensive management practices, it represents one of the most economically important health traits for milk production. Pentraxins are a superfamily of conserved molecules with immune functions such as complement activation and opsonization. PTX3 is the prototypic long pentraxin and is produced by different cell populations after pro-inflammatory stimuli (TLR ligands, IL-1 $\beta$  and TNF $\alpha$ ). Some studies have demonstrated the up-regulation of PTX3 mRNA during ruminant mastitis but its role is still unknown. To better understand the role of PTX3 we investigated its pattern of expression in a model of *S. aureus* intramammary infection in goat. Because no data on goat PTX3 are available, we first studied PTX3 pattern of expression in a wide panel of goat healthy tissues. PTX3 mRNA was expressed at high level in bone marrow, mammary gland, aorta, pancreas, skin and lungs. Then we focus our attention to the mammary gland; six healthy goats were infused with PBS in the right udder and with *S. aureus* in the left udder and mammary biopsies for immunohistochemistry and RNA extraction were collected 30 hours post infection. Immunohistochemistry revealed that in non-infected udders PTX3 was mainly expressed in the apical cytoplasmic portion of mammary epithelial cells (MEC) and in macrophages; whereas during *S. aureus* infection PTX3 was up-regulated in MEC and in the secretum. Moreover, PMNs recruited during infection were variably intensely positive. PTX3 mRNA expression was low in healthy udders compared to the infected ones, indeed this molecule is commonly induced after pro-inflammatory stimulation. Finally, we investigated the modulation of PTX3 during field mammary infection, comparing its expression in healthy and *S. aureus* infected goats (blood leukocytes, milk somatic cells, milk fat globules). PTX3 mRNA was significantly up-regulated in circulating PMN and milk somatic cells. In circulating monocytes and in milk fat globules we observed a statistically non-significant tendency of increase expression in *S. aureus* infected animals. These observations could reveal a role of PTX3 as a key player in the immune response of mammary gland to *S. aureus* infection and it could represent a marker of mastitis in goat that can be used for a fast and early diagnosis of intramammary infection in the field.

### Biography

Joel Fernando Soares Filipe is currently working at University of Milan, Italy. His research interest is based on "Role of PTX3 in the immune response". He has published many articles in reputed journals.

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