

MBG FOCUS TALK

hosted by Erik Østergaard Jensen



Tuesday November 14 at 1:15 - 2:00 pm

Science Park, conference room (3130-303)

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Osteopontin – structure, function and application of a bioactive milk protein

Milk is the perfect nutrition for mammalian offspring, a result of millions of years' evolution, excellently adapted to the requirements of the neonate and growing young. Milk has an optimal composition of nutritional macronutrients, including all essential amino acids, fatty acids and species-specific complex oligosaccharides. Moreover, milk contains numerous biologically active proteins and peptides, which play important roles in the development of the offspring. In particular, the whey fraction represents a rich source of such proteins and peptides, and there is growing scientific and industrial interest into exploiting these proteins for use in specialized nutrition products with health promoting effects.

In this seminar, research on one of the bioactive milk proteins, osteopontin (OPN), which has attracted much attention in recent years, and which is now being marketed as a high-value ingredient for use in infant formulas as well as other functional applications will be presented. OPN is a highly posttranslationally modified protein expressed by several cell types and accordingly it is present in many tissues and body fluids. OPN is involved in a plethora of biological processes including bone remodeling, calcification processes, cell signaling and several immune functions, including defense mechanisms against bacteria. However, milk has the highest OPN concentration of all tissues and fluids, suggesting an important role in neonate nutrition and development.

The presentation will contain data on the structural characterization of milk OPN including localization of posttranslational modifications and their impact on OPN function demonstrated by in vitro assays. Moreover, in vivo data on oral administration of milk OPN showing positive results in attenuation of gut inflammation and of alcohol-induced liver injury in mice will be presented. Promising results from human infant intervention trials with infant formulas fortified with milk OPN will also be shown.