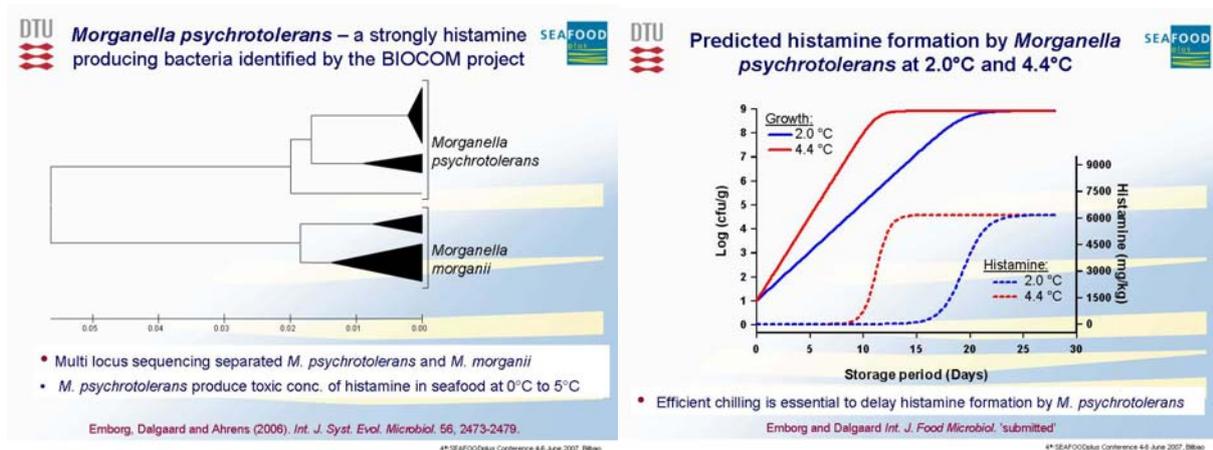


Histamine and biogenic amines in seafood – new developments and consumer exposure

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This presentation includes the main findings and conclusions from the BIOCOCOM project 'Biogenic amines in seafoods – assessment and management of consumer exposure'. The overall objective of BIOCOCOM is to reduce the occurrence of histamine fish poisoning (HFP). The project has focused on incidents of HFP and on psychrotolerant bacteria with potential to form toxic concentrations of biogenic amines in seafood at storage temperatures as low as 0°C to 5°C. DIFRES and the Danish Veterinary and Food Administration participated in BIOCOCOM which was lead by Paw Dalgaard.

HFP is an intoxication caused by consumption of different types of marine finfish. It is a common characteristic of these seafoods that, at some stage between catch and consumption, specific bacteria have been able to grow to high concentrations and to form histamine and other biogenic amines in the products. HFP is common and occurs world wide. Thus, control of the factors that allow seafood to cause HFP deserves to be improved.

During 2004 – 2006 the BIOCOCOM project studied 16 incidents of HFP from Denmark. In five of these incidents BIOCOCOM identified the bacteria responsible for the formation of histamine. This is a doubling of the earlier number of resolved incidents available in international journals. Thus the BIOCOCOM project has contributed importantly to our present understanding of the importance of bacteria for histamine formation in seafood. In fact, we have identified *Morganella psychrotolerans* as a new psychrotolerant and strongly histamine-producing species within the genus *Morganella*. Today it is clear that both mesophilic bacteria (*Morganella morgani*, *Hafnia alvei* and *Raoultella planticola*) and psychrotolerant bacteria (*Morganella psychrotolerans* and *Photobacterium phosphoreum*) can produce toxic concentrations of histamine and other biogenic amines in seafood and thereby cause HFP.

Growth kinetics and activity of histamine producing bacteria in chilled seafood has long remained unknown. BIOCOCOM has developed a mathematical model to predict the effect of temperature (0-20°C), atmosphere (CO₂ 0-100%) and water activity above 0.97 (corresponding to less than 5% water phase salt) on histamine formation in chilled seafood by *M. psychrotolerans*. The model allows the effect of these parameters to be evaluated quantitatively. The model includes product characteristics and storage conditions that are typical for seafood that causes HFP. Development of this model is an important step to initiate exposure assessment studies.