Antisecretory Factor – experimental studies on cellular effects and mechanism of action

Antisecretory Factor (AF, also named S5a/rpn 10) is a 43 kDa ubiquitously expressed protein which acts as a regulator of water and electrolyte transport and counteracts inflammation. AF was identified and cloned in our group 1995. We have since then studied properties, functions and clinical use of AF.

Exposure to enterotoxins or intake of specific food component increases AF-activity. Clinical studied have shown that intake of an AF-inducing diet can decrease symptoms in diseases where inflammation and/or secretory disturbances are involved, e.g. inflammatory bowel disease (IBD), endocrine diarrhoea and Menieres disease.

The antiseceetory and anti-inflammatory active part of AF is an 8 amino acids long sequence in the N-terminal part of the protein. A somewhat longer peptide called AF-16 has better stability and is more suitable for experimental work. Our present work aims at clarifying the mechanism of action for AF and AF derived peptides in order to get a better foundation for further experimental and clinical studies.

In experimental encephalitis induced by herpes simplex virus (HSV-1) treatment with AF-16 abolished the mortality. PCR and immunohistochemistry showed no effect on virus replication of the AF treatment. However, AF-16 was found to normalize the raised intracranial pressure caused by the infection.

This study indicates that AF-16 does not affect the replication of the infectious agent but diminishes the secondary damage caused by the inflammation. The key effect of AF thus appears to be anti-inflammation. In order to identify the cellular target mediating the anti-inflammatory effect we are combining a number of in vivo and in vitro methods including histology and histochemistry, autoradiography, thin layer chromatography, TOF-SIMS, animal experiments and cell culture.

Recent publications


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Exams/Education
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My main project concerns experimental studies of the protein Antisecretory Factor (AF). The work aims at clarifying the mechanism of action for AF and AF derived peptides in order to get a better foundation for further experimental and clinical studies. Combinations of in vivo and in vitro methods are used with emphasis on light microscopy techniques. Due to my expertise in histology and histological methods I am also involved in experimental and clinical research concerning adipose tissue, adiposity and the metabolic syndrome.

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