

# Antisecretory Factor and medical food — novel therapy concepts

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The antisecretory factor (AF) is a protein secreted in plasma and other tissue fluids in mammals. This 41-kDa protein provides protection against diarrheal diseases and intestinal inflammation. The AF protein is induced by cholera toxin and was first isolated and characterized by Swedish researchers Lange and Lönnroth in the 80's.

Immunocytochemistry has shown that AF is present in most tissues in the body (1). The endogenous plasma level of AF is increased by enterotoxins and surprisingly also by certain food constituents (2). Based on these findings, AF-inducing medical and functional food and feed products have been developed by the Swedish R&D company Lantmännen AS-Faktor AB. SPC is an AF-inducing medical food, but the company has also developed an AF-rich egg yolk powder, Salovum (B221) (3).

SPC is short for Specially Processed Cereals. Tests with this product showed it to be effective in reducing diarrhea in various animal species. In human clinical trials SPC stimulates the production of the Antisecretory Factor protein in patients suffering from IBD, reduces their symptoms and improves their quality of life.

In further clinical trials in Crohn's disease, secretory diarrhea and short bowel syndrome, SPC has been shown to exert both antisecretory effects (by inducing AF) and anti-inflammatory effects.

**Because of the effects on hypersecretion in the GI tract, it was hypothesized that antisecretory treatment with SPC could be valuable in other instances where fluid imbalance is thought to play a role, such as Meniere's disease.**

In an open pilot study, 24 MD patients received SPC for 14 — 30 days, and AF levels in plasma increased in 83 % of the patients. 17 % of the patients had no or very low increase of AF in plasma and none of these were improved. The attacks of rotatory vertigo were reduced in 12 patients and in three of these hearing was normalized. Studies in rats using immunohistochemical methods demonstrated that AF was localized to the cochlea and the vestibule of the inner ear, which led the authors to propose that AF could be a new regulator of endolymph (4).

The second Swedish study was randomized, double-blind and placebo-controlled. 51 adult patients with MD were included. 27 subjects were treated with SPC (1 g per kg body weight per 24 hours in two servings) and 24 with control cereals for three months. The severity of MD was classified according to the American Academy of Otolaryngology — Head and Neck Surgery (AAO-HNS) grading system. 14 of the 27 patients in the SPC group reported decreased vertigo, compared to only 2 of 24 in the control group ( $p < 0.001$ ). There were no side effects reported (5).

The Swedish researchers have further demonstrated that an SPC diet fed to rats increases plasma levels of antisecretory factor compared to a standard rodent diet (6). In a follow-up study, SPC was fed to rats in dietary concentrations of 5, 10 or 15 % for 2 weeks, and the AF activity in plasma increased in a dosage- and time-dependent manner (7).

The Swedish results attracted the interest of a British research group, who performed a randomized, double-blind, cross-over and placebo-controlled study with SPC in 39 patients with Meniere's disease. The outcome measure was the AAO — HNS Functional Level Scale (FLS). The FLS score improved significantly after SPC, and the treatment was well tolerated by 91 % of the patients. 59 % of the participants reported an improvement in functional level (8)

**The presence of AF in the inner ear has been studied by Chinese researchers, who found that the range of localization of AF overlaps the distribution of aquaporin 1 (AQP 1) and aquaporin 2 (AQP 2). The authors suggest that an interaction between AF, AQP 1 and AQP 2 might be possible (9). Aquaporins 4 and 5 have recently been implicated in the water permeability of the mammalian cochlea (10).**

Today, the antisecretory factor protein (AF) is recognized as a fundamental regulator of fluid balance in mammals. The relevance of water dynamics for Meniere's disease point the way for further clinical studies with AF-rich (Salovum, B221) and AF-inducing (SPC, SPC-Flakes) medical food products.

For information on international distributors, see [www.poapharma.com](http://www.poapharma.com)

## References

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