which effects phytomedical extracts induce in respiratory cells and which effects they demonstrate against relevant bacterials. Therefore it is interesting whether or not plant extracts induce activity in the first- and second-line defense of nasal mucosa. We addressed our interest to the capabilities of these substances in influencing in either human anti-microbial activity in nasal mucosa or direct anti-microbial activity in vitro.

The anti-microbial activities of plant extracts were determined by in vitro bioassays using agar diffusion method. The minimal bactericidal concentration (MBC) and lethal dose, LD90/50, were calculated for gram-positive and -negative bacterial standard strains. Bacteria strains were selected according to their relevance on upper airway infection.

We could find out that Sinupret® either induces human anti-microbial peptides or has direct anti-microbial activity against some of the bacteria. This has been shown concerning MBC, LD90, and LD50.

Conclusion: Phytomedical extracts revealed distinct anti-bacterial activities. The astonishing, hitherto unknown, anti-bacterial activities of the commercially phytochemical and its extracts gave some promising clues on the anti-infective efficacy of the drug observed in clinical experience and this encourages us to elucidate the anti-microbial efficacy of phytochemical drugs.

10.1016/j.eujim.2008.08.106

Preclinical development and animal trials in herbal treatment—Examples from Sinupret®

P. Stierna

Department of Otorhinolaryngology, Karolinska University Hospital, Huddinge, Stockholm, Sweden

The persistence of the inflammatory response in sinusitis is not only dependent on individual differences in host immune responses, but also on specific influence of these responses by local microbes. Understanding and differentiating infectious and non-infectious inflammatory stimuli are critical to understand sinusitis. Emerging data speak towards aberrant immune responses, i.e. defect transition and timing of innate and acquired immunity, leading to locally reduced host defence. Strategies for preclinical development must involve well-designed *in vitro* and *in vivo* (animal) studies to analyse the herbal-specific effects on improved host defence immune responses.

In the present study on acute experimental rabbit sinusitis, a reductive effect of Sinupret® herbal compound was evident on mucosal histopathology, bacterial counts and macroscopical pathology. This was further verified and documented by computer tomography (CT) scan investigation of sinus opacification. Thus the experimental data from the clinically well-known herbal composition Sinupret® show strong anti-inflammatory effects but also display clear anti-bacterial effects in relation to take, initiation, plateau and resolution of the specific microbial infection, and the effects are as well most likely dependent on modulation of innate immunity. This knowledge opens up the possibility to tailor treatment strategies more closely to the individual pathophysiology of rhinosinusitis.

10.1016/j.eujim.2008.08.107

Toward a phenomenological systems biology approach of atopic asthma treatment

C. van Tellingen[a,b], G. van der Bie[a,b,c]

[a]*Louis Bolk Institute, Department of Healthcare and Nutrition, Driebergen, The Netherlands*
[b]*Universitaet Witten/Herdecke, Medizin, Herdecke, The Netherlands*
[c]*Universitaet Utrecht, Medizin, Utrecht, The Netherlands*

Introduction: Bronchial asthma treatment would benefit from innovative methods that diminish the need for (inhalation) corticosteroid therapy (ICT). In integrative medical practice, the call for effect-based therapeutic interventions, which include views such as are used in complementary medicine, is growing.

An approach that includes changes in other physiological systems than those that are directly involved may render innovative methods for integrative medicine that will lead to new therapeutic venues for atopic asthma. One reason that biological systems can be difficult to study is that so many different interactions with other organisms and the environment are possible.

One of the goals of phenomenological systems biology is to discover new emergent properties in the entirety of processes that take place in a biological system. An integrative systems biology approach of the clinical symptoms of atopic asthma may be used to validate therapies that are used in integrative medicine.

Method: Phenomenological systems biology is a systematic study of complex interactions in biological systems, using the perspective of integration rather than reduction to study them. It first gathers the signs and symptoms of patients with atopic asthma. Then it characterizes them taking into account the organism's functioning as a whole.

Results: The characteristic clinical symptoms of asthma include strained inspiration, increased awareness and tight musculature. These symptoms indicate increased nervous system activity. At the same time, metabolic activity in the respiratory tract is increased as a result of inflammatory processes, and intestinal metabolic activity is impaired. The highly differentiated anatomical and physiological function of the bronchial part of the respiratory tract is disturbed. It has shifted toward functions that are normal in the upper respiratory tract, situated in the head.

A functional dislocation destroys the balance between organ systems in asthma. Treating asthma benefits from treating the increased nervous activity and the disturbed metabolic and intestinal activity as well as the respiratory problems. This is realized by therapeutic interventions that are used in complementary medicine, which also reduce the need for ICT.

The validity of the model will be demonstrated at hand of the treatment of asthma in anthroposophic medicine (AM). As