

available for animal nutrition, an alternative has been found in the plant *Solanum glaucophyllum* which contains the active form of Vitamin D₃ in glycosidically bound form. In order to exploit this plant as a source of active vitamin D, a unique standardized and formulated herbal product for animal nutrition containing 1,25(OH)₂D₃-glycosides as active components was developed. This affords better pharmacokinetic properties and turns the product into a slow release form with little danger of overdosing.

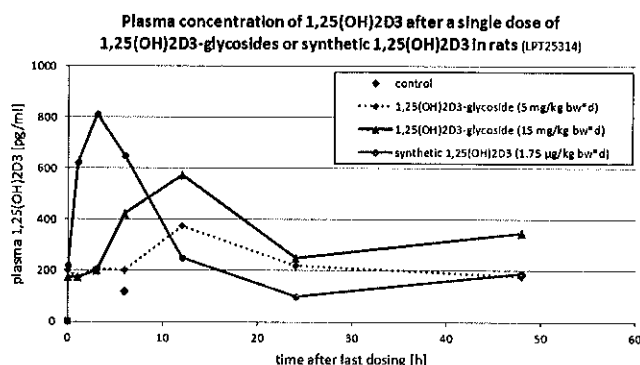


Fig. 1: Difference in plasma concentrations of 1,25-dihydroxyvitamin D₃ after a single dose of free 1,25-dihydroxyvitamin D₃ and a herbal extract of *Solanum glaucophyllum* after a single application in rats.

Reference: [1] EUROPEAN COMMISSION, the Welfare of Chickens Kept for Meat Production (Broilers), Report of the Scientific Committee on Animal Health and Animal Welfare, page 33, adopted 21 March 2000, SANCO.B.3/AH/R15/2000

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Sainfoin – new data on anthelmintic effects and production in sheep and goats

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Gastrointestinal nematodes (GIN) are one of the most important problems affecting health and therefore performance and welfare in small ruminant husbandry. The control of these parasites in the past strongly relied on the repeated use of anthelmintic drugs. This has led to nematode populations which are resistant to most of the currently available anthelmintics. Furthermore customer's demands for organic and residue free animal products are increasing. The aforementioned problems have given a strong impetus for the development of new non-chemical strategies to control GIN. Previous research has pointed out the anthelmintic potential of sainfoin (*Onobrychis viciifolia*, cv. Visnovsky) and other tanniferous (CT) feed sources in goats and lambs infected with GIN. A recent Swiss experiment focussed on the use of sainfoin and field bean (*Vicia faba*, cv. Scirocco) as single CT sources as well as in combination for additional synergic effects, to reduce periparturient GIN egg rise of ewes in late gestation and early lactation. Another experiment with Alpine goats concentrated on the influence of sainfoin on milk performance and cheese quality. The results of these experiments will be presented and discussed in connection with previous knowledge on (i) anthelmintic effects of sainfoin and (ii) the influence of sainfoin administration on performance.

Miscellaneous

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Effective plant reproduction of *Pelargonium sidoides* by using somatic embryogenesis

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Roots of the native South African medicinal plant *Pelargonium sidoides* DC are used for the production of the herbal medicinal product Umckaloabo® which is approved for the treatment of acute bronchitis. Initially, the plant material only originated from wild collections. Since some years the root material increasingly is derived from plant agriculture of *P. sidoides*. Nevertheless the population of wild growing plants during

the last years decreased by half (1). With regard to species protection in combination with an increasing demand of plant material for the industrial production of the medicinal product, the requirement of an effective method for the propagation of *P. sidoides* becomes obvious. With somatic embryogenesis, a cell culture technique for plant reproduction, embryos could be generated from somatic cells of blossom stems of *Pelargonium*. A one-week cultivation of the plant explants in media containing specific phytohormones followed by a cultivation period without phytohormones resulted in the induction of numerous somatic embryos within 3–4 weeks. A treatment of explants with a specific purified extract leads to improved somatic embryogenesis. The method allows an enhanced production of numerous clones from one plant (e.g. interesting chemical races) and represents an effective way of plant reproduction. Reference: [1] Newton, D. (2008): Development of a non-detriment finding process for *Pelargonium sidoides* in Lesotho. International Expert Workshop on CITES Non-Detriment Findings. Cancun, Mexico, 2008.

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Anti-viral and anti-inflammatory efficacies of Sinupret® dry extract BNO 1011 rationalise its therapeutic use in acute rhinosinusitis

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The herbal medicinal product Sinupret® (Gentianae radix, Primulae flos, Sambuci flos, Rumicis herba, Verbenae herba) is used for the treatment of acute rhinosinusitis. Its pathophysiology is dominated by inflammation in nasal/paranasal mucosae, mainly triggered by infection with respiratory viruses like human influenza A. We investigated the antiviral and anti-inflammatory activity of Sinupret® dry extract BNO 1011 *in vitro* and *in vivo*. BNO 1011 was tested against two human influenza A H1N1 (Flu A) strains with divergent sensitivity against the neuraminidase inhibitor oseltamivir (OS) in a plaque reduction test and for neuraminidase inhibition of the same Flu A strains. The anti-oxidative capacity of BNO 1011 was evaluated by monitoring the diphenylpicrylhydrazyl (DPPH) radical scavenging activity. In the carrageenan-induced pleurisy model in rats, BNO 1011 (100 mg/kg and 500 mg/kg, p.o.) was analysed for suppression of pro-inflammatory parameters [exudate formation, neutrophil infiltration, prostaglandin E (PGE)₂ levels; pulmonary cyclooxygenase (COX)-2]. BNO 1011 blocked Flu A replication with an EC₅₀ of 8 µg/mL for each strain tested. As underlying mechanism, neuraminidase inhibition was identified (IC₅₀: 59 µg/mL and 100 µg/mL, respectively), irrespective of the strains' sensitivity against oseltamivir. Regarding the anti-inflammatory activity, BNO 1011 reduced the DPPH radical concentration (IC₅₀: 46 µg/mL) *in vitro*. Moreover, orally applied BNO 1011 significantly reduced exudate volume, neutrophil influx (100 and 500 mg/kg), PGE₂ levels and COX-2 expression (500 mg/kg) in acute pleurisy. Together, BNO 1011 acted against the cause of respiratory viral infection and interfered with the inflammatory collateral damage. These findings support the application of BNO 1011 in the treatment of acute, viral rhinosinusitis.

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Calcium antagonistic effects of ethanolic myrrh extract in inflamed intestinal smooth muscle preparations

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Myrrh is the oleo-gum resin of mainly *Commiphora molmol* ENGLER (Burseraceae) and as powdered substance one compound in the traditional medicinal product Myrrhinil-INTEST®, which has been used for the treatment of unspecific and inflammatory intestinal disorders. To date only limited data is available regarding its mechanism of action. Besides antimicrobial and antiplostatic properties calcium antagonistic and antidiarrhoic effects have been discussed [1]. The aim of the present study was to evaluate the calcium antagonistic effect of myrrh. Therefore, an ethanolic myrrh extract (MY) was tested for its effects on muscle tone and acetylcholine (ACh)-induced contractions in untreated and inflamed rat ileum/jejunum preparations. Inflammation was experimentally induced by 2,4,6-trinitrobenzene sulfonic acid (TNBS, 10 mM, 30 min). Additionally, the effect of the calcium channel agonist Bay K8644 in presence of varying MY concentrations was examined to con-