



## Latest Publications You Should Not Miss

Selected by Michael Walkenhorst, Frick

**Morrogh-Bernard HC, Foitová I, Yeen Z, Wilkin P, de Martin R, Rárová L, Doležal K, Nurcahyo W, Olšanský M. Self-Medication by Orang-Utans (*Pongo pygmaeus*) Using Bioactive Properties of *Dracaena cantleyi*. Sci Rep. 2017 Nov 30;7(1):16653.**

Animals self-medicate using a variety of plant and arthropod secondary metabolites by either ingesting them or anointing them to their fur or skin apparently to repel ectoparasites and treat skin diseases. In this respect, much attention has been focused on primates. Direct evidence for self-medication among the great apes has been limited to Africa. Here we document self-medication in the only Asian great ape, orang-utans (*Pongo pygmaeus*), and for the first time, to our knowledge, the external application of an anti-inflammatory agent in animals. The use of leaf extracts from *Dracaena cantleyi* by orang-utan has been observed on several occasions; rubbing a foamy mixture of saliva and leaf onto specific parts of the body. Interestingly, the local indigenous human population also use a poultice of these leaves for the relief of body pains. We present pharmacological analyses of the leaf extracts from this species, showing that they inhibit TNF $\alpha$ -induced inflammatory cytokine production (E-selectin, ICAM-1, VCAM-1 and IL-6). This validates the topical anti-inflammatory properties of this plant and provides a possible function for its use by orang-utans. This is the first evidence for the deliberate external application of substances with demonstrated bioactive potential for self-medication in great apes.

**Kupper J, Walkenhorst M, Ayrle H, Mevissen M, Demuth D, Naegeli H. Online Information System for Phytotherapy in Animals. Schweiz Arch Tierheilkd. 2018 Oct;160(10):589–595.**

Phytotherapy becomes increasingly popular in veterinary medicine. To fully exploit the therapeutic potential of medicinal plants and ensure their safe use, knowledge about the effective plant parts and preparations is required. Improper use and overdosage of medicinal plants can be toxic. With [www.phytoarznei.ch](http://www.phytoarznei.ch), we provide an online decision support aid that allows for the retrieval of cur-

rently available information on medicinal plants and their use in domestic animals. This decision support system is based on the available literature in the field, which after critical evaluation has been incorporated into a structured database. For each medicinal plant or drug, we have listed therapeutic indications, different application types, organoleptic properties, plant ingredients, pharmacological effects, dosages, duration of treatment, toxicity, legal frame for use in livestock and relevance for doping. A user-friendly access to all data is achieved by means of two search programs, either by entering the plant name or name of the drug in a search field or by selecting the desired animal species and therapeutic application from respective drop-down lists. This database on medicinal plant applications in animals is linked to the poisonous plant database of the University of Zurich and, for marketed preparations, to the Swiss compendium of veterinary medicinal products as well as to an index of related veterinary products.

**Liang X, Bi X, Kamruzzaman M, Sano H. Effect of Chinese Herbal Medicine on Kinetics of Plasma Phenylalanine, Tyrosine and Whole Body Protein Synthesis in Sheep. Anim Sci J. 2019 Apr;90(4): 533–538.**

The aim of this study was to evaluate the effect of feeding decoction of a traditional nourishing Chinese herbal medicine formula on rates of plasma phenylalanine and tyrosine turnover and whole body protein synthesis in sheep. Ruminal fermentation characteristics and blood metabolites were also determined. Six sheep were subjected to either mixed hay (MH-diet, as control) or MH-diet supplemented with 2% of Chinese herbal medicine (mixture of Astragalus root, Angelica root, and Atractylodes rhizome; CHM-diet) in a crossover design for each of 3-week period. The isotope dilution of [ $^2\text{H}_5$ ]phenylalanine and [ $^2\text{H}_2$ ]tyrosine was performed as a primed-continuous infusion to measure plasma phenylalanine and tyrosine kinetics. Concentrations of total volatile fatty acid, acetate, and propionate in the rumen tended to be higher ( $p < 0.10$ ), and the pH value was lower ( $p = 0.04$ ) for the CHM-diet than the MH-diet. Turnover rates of plasma phenylalanine and tyrosine tended to be higher ( $p < 0.10$ ) for the CHM-diet

than the MH-diet. Furthermore, whole body protein synthesis was greater ( $p = 0.04$ ) for the CHM-diet compared with the MH-diet. The Chinese herbal medicine improved rumen fermentation and enhanced protein metabolism in sheep. Hence, it is suggested that the decoction of Chinese herbal medicine formula could be considered as a potential feed additive for ruminant production.

**Su J, Zhu Q, Zhao Y, Han L, Yin Y, Blachier F, Wang Z, Kong X. Dietary Supplementation With Chinese Herbal Residues or Their Fermented Products Modifies the Colonic Microbiota, Bacterial Metabolites, and Expression of Genes Related to Colon Barrier Function in Weaned Piglets. *Front Microbiol.* 2018 Dec 21;9:3181.**

To explore the feasibility of dietary Chinese herbal residue (CHR) supplementation in swine production with the objective of valorization, we examined the effects of dietary supplementation with CHR or fermented CHR products on the colonic ecosystem (i.e., microbiota composition, luminal bacterial metabolites, and expression of genes related to the intestinal barrier function in weaned piglets). We randomly assigned 120 piglets to one of four dietary treatment groups: a blank control group, CHR group (dose of supplement 4 kg/t), fermented CHR group (dose of supplement 4 kg/t), and a positive control group (supplemented with 0.04 kg/t virginiamycin, 0.2 kg/t colistin, and 3000 mg/kg zinc 0.04 kg/t virginiamycin, 0.2 kg/t colistin, and 3000 mg/kg zinc oxide). Our results indicate that dietary supplementation with CHR increased ( $P < 0.05$ ) the mRNA level corresponding to E-cadherin compared with that observed in the other three groups, increased ( $P < 0.05$ ) the mRNA level corresponding to zonula occludens-1, and decreased ( $P < 0.05$ ) the quantity of *Bifidobacterium* spp. When compared with the blank control group. Dietary supplementation with fermented CHR decreased ( $P < 0.05$ ) the concentration of indole when compared to the positive control group; increased ( $P < 0.05$ ) the concentrations of short-chain fatty acids compared with the values measured in the CHR group, as well as the mRNA levels corresponding to interleukin 1 alpha, interleukin 2, and tumor necrosis factor alpha. However, supplementation with fermented CHR decreased ( $P < 0.05$ ) interleukin 12 levels when compared with the blank control group. Collectively, these findings suggest that dietary supplementation with CHR or fermented CHR modifies the gut environment of weaned piglets.

**Sayed-Ahmed MZ, Ahdy AM, Younis EE, El-Khodery SA, Baraka HN. Comparative Effectiveness of Sumaq and Neem Extract Cream, Enilconazole and Glycerine Iodine on Dermatophytosis in Arabian Horses: A Randomized Clinical Trial. *Trop Anim Health Prod.* 2018 Dec 15; doi: 10.1007/s11250-018-1773-6.**

Dermatophytosis is a contagious fungal disease among animal communities. The major concerns of dermatophytosis are cost of treatment, difficulty of control, and the public health consequences. The objective of the present study was to compare the clinical efficacy of Sumaq and Neem extract cream with that of traditional treatments, enilconazole and glycerine iodine, on dermatophytosis in Arabian horses. For this purpose, 37 Arabian horses with dermatophytosis had been used. Fungal isolation and identification for each horse were carried out by standard microbiological procedures. Sumaq (*Rhus coriaria* Linn.) and Neem (*Azadirachta indica*) seed extracts were selected based on in vitro effectiveness.

Horses were randomly allocated into four groups. The first group ( $n = 8$ ) was treated with glycerine iodine 10% daily for 7 days. The second group ( $n = 10$ ) was treated using enilconazole 10% emulsified concentrate four times with 2 days interval. The third group ( $n = 11$ ) was treated with Neem seeds extract (20% cream) daily for 10 days, and the fourth group ( $n = 8$ ) was treated with Sumaq extract (5% cream) daily for 10 days. Clinical and mycological evaluations were assessed at 0, 7, 14, 21, and 28 days post-treatment. The Sumaq and enilconazole were more effective on clinical index score after 7 days of treatment followed by Neem seed 20% cream. At 28 days post-treatment, a complete healing was obtained by Sumaq 5% cream and enilconazole (median clinical sum score = zero) followed by Neem (median clinical sum score = 1.5). Moreover, Dermatophytes spp. was isolated only from two horses, one from Neem group and the other from glycerin iodine group. The present results indicate that Sumaq 5% and Neem seed extract are effective alternative treatment for dermatophytosis in Arabian horses.

**Arczewska-Włosek A, Świątkiewicz S, Ognik K, Józefiak D. Effect of Dietary Crude Protein Level and Supplemental Herbal Extract Blend on Selected Blood Variables in Broiler Chickens Vaccinated against Coccidiosis. *Animals (Basel).* 2018 Nov 15;8(11). pii: E208. doi: 10.3390/ani8110208.**

Immunoprophylaxis with a live anticoccidial vaccine is regarded as the most promising alternative in place of in-feed coccidiostats in the poultry industry. An experiment, designed as a  $2 \times 2 \times 2$  factorial arrangement with 6 replicate pens per treatment and 8 male Ross 308 chicks per pen, was conducted to evaluate the effect of dietary crude protein (CP) levels (21.6% or 23.6%, during the starter phase) and a herbal extract (HE) blend dietary supplementation (*Echinacea purpurea*, *Salvia officinalis*, *Thymus vulgaris*, *Rosmarinus officinalis*, *Allium sativum*, *Origanum vulgare*; 0 or 2 g/kg of feed) on selected hematological, biochemical, redox, and immunological parameters in broilers vaccinated against coccidiosis (anticoccidial vaccine (ACV); none or  $1 \times$  dose, administered at 1 d of age). The blood samples were collected at 14 d of age. Anticoccidial vaccination ( $p < 0.05$ ) had a negative effect on immune responses, as shown by a reduced total white blood cells (WBC) count, a reduced lymphocytes count (L), a higher proportion of heterophils (H) in leukogram assessments, as well as H/L-ratio increase. ACV resulted in a decrease in phagocytic activity assessed as decreased percentage of phagocytic cells, phagocytic index and NBT test, as well as in reductions in plasma glucose and LDL-cholesterol concentrations, and increases in HDL-cholesterol and aspartate aminotransferase (AST) activity. In terms of redox status, ACV significantly increased the catalase (CAT) activity and ferric reducing ability of plasma (FRAP), and decreased malondialdehyde concentrations. An increase in dietary CP in vaccinated chickens resulted in higher relative L and lower relative H counts, a lower H/L ratio, a decrease in AST and an increase in CAT activities, but also a decrease in FRAP and concentrations of lipid peroxides. Vaccinated chickens fed a diet supplemented with HE were characterized by higher relative L and lower relative H counts, a lower H/L ratio, and a decrease in AST activity. A change of diet composition, such as an increase in CP content and dietary HE supplementation, can be recommended in broilers vaccinated against coccidiosis, mainly due to its positive effect in alleviating stress levels. However, the simultaneous increase of CP and HE dietary supplementation offered no additional relevant benefits in most of the blood indices of vaccinated chickens.