

113 Immunological Effects of *Ganoderma lucidum* Supplementation in Canine Nutrition.

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Abstract: *Ganoderma lucidum* (GL) is a mushroom that has been widely used in Asia for its immunomodulatory, anti-inflammatory and anti-tumor capacity in humans. However, the nutraceutical properties of GL have not been tested in dogs. Forty adult beagles were used in a completely randomized design and were fed a commercial dry extruded complete and balanced diet plus GL top-dressed daily upon feeding time. Four experimental treatments were used: 0% GL supplementation (control), 5 mg/kg BW of GL, 10 mg/kg BW of GL, or 15 mg/kg BW of GL. Following a 7 d adaptation to the control diet, dogs were fed their respective treatment diets for consecutive 28 d. They were challenged with vaccination of a modified live virus Canine Distemper, Adenovirus Type 1 (Hepatitis), Adenovirus Type 2, Parainfluenza, and Parvovirus and killed Rabies Virus on d 7 with blood collections on d 0, 14, and 28. The objective of the present study was to evaluate the effects of dietary inclusion of GL on peripheral blood mononuclear cells (PBMC; T-cells, B-cells, monocytes, and natural killers) and vaccine titers response of adult dogs. The inclusion of GL in all dosages was well-accepted by all dogs. There was a trend that the percentage of MHC-II from B-cells was greater in dogs fed 15 mg/kg of GL (41.91%) compared with the control group (34.63%). The phagocytosis response tended to have treatment by time interaction among treatments; dogs fed 15mg/kg of GL tended to have greater phagocytosis activity on d 28 than dogs from the control group and dogs fed 5mg/kg of GL. These data suggest that the inclusion of GL had no detrimental effects on analyzed PBMC. Based on our findings, GL may also exert beneficial immunomodulatory effects in healthy adult dogs when provided at a daily dose of 15 mg/kg BW.

Keywords: canine, immunomodulatory, nutraceutical

114 Effects of Dietary Camelina oil Supplementation on Inflammatory and Oxidative Markers, Trans-Epidermal Water Loss, and Skin and Coat Health Parameters in Healthy Adult Dogs.

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Abstract: Camelina oil has a desirable ratio of the essential fatty acids (EFAs) omega-3 alpha-linolenic acid (C18:3n-3; ALA), and omega-6 linoleic acid (C18:2n-6; LA). Alpha-linolenic acid supports canine skin and coat health, and inflammation. Therefore, an investigation of the effects of camelina oil on skin and coat health, and inflammation in comparison with other plant-derived EFA oil sources is needed. The objective of this study was to compare the effects of camelina oil to those of flaxseed and canola oil on skin and coat health, skin barrier function, and pro- and anti-inflammatory biomarkers. Thirty privately-owned, adult dogs of various breeds (17 females; 13 males), with an average age of 7.2 ± 3.1 years and body weight (BW) of 27.4 ± 14.0 were used. After a 4-week wash-in period using sunflower oil and a commercial kibble, dogs were blocked by age, breed, and size, and randomly allocated to one of three treatment oils: camelina, canola, or flaxseed. Trans-epidermal water loss (TEWL) was measured using a VapoMeter on the pinna, paw pad, and inner leg. Fasted blood samples were collected to determine serum pro- and anti-inflammatory biomarker concentrations. Prostaglandin E2 (PGE2) and Plakoglobin (JUP) concentrations were measured via enzyme-linked immunosorbent assay (ELISA) kits, while nitric oxide (NO) and glycosaminoglycan (GAG) concentrations were determined using spectrophotometric assays. A 5-point-Likert scale was used to assess skin and coat characteristics. All data were collected on weeks 0, 2, 4, 10, and 16 and assessed using PROC GLIMMIX in SAS. Follicle density, fur color, shine, and softness increased and skin moisture and dander decreased from baseline in all treatment groups ($P > 0.05$). Outcomes did not differ ($P > 0.05$) among treatment groups over 16 weeks, indicating that camelina oil can be considered comparable with existing plant-based canine oil supplements, flaxseed and canola, to support skin and coat health, and inflammation in dogs.

Keywords: camelina, canine nutrition