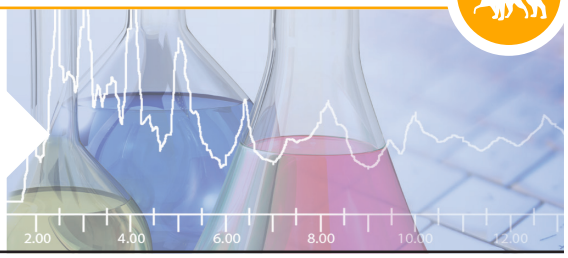
# FOCUS ON RESEARCH




## Safety and immune benefits of EpiCor® Pets postbiotic supplementation in adult dogs

**The objective of this study was to evaluate the effects of daily oral supplementation of EpiCor® Pets postbiotic on immune function in dogs and to verify its safety when fed at the target and a 4-fold target use rate. This study was conducted at Iowa State University College of Veterinary Medicine (Palíc et al.,2011[1]).**

### Overview

- 56-d study
- Thirty adult Beagle dogs (18 female and 12 male) were randomly assigned to one of three supplementation treatments balancing initial body weight:
  - CONT; placebo
  - LOW; 7 mg/kg BW of EpiCor Pets postbiotic; Target use rate
  - HIGH; 29 mg/kg BW of EpiCor Pets postbiotic
- Capsules containing EpiCor Pets were orally administered daily to each dog in the morning throughout the study duration and researchers were blinded to treatments.
- A complete clinical health examination was performed weekly and blood samples collected every two weeks to monitor overall health in addition to measuring markers of *in vitro* T-cell function and specific antibody responses (IgA and IgE). Saliva samples were collected bi-weekly and analysed for IgA.

### Results

- Throughout the study and across all treatments, dogs maintained good health and exhibited no clinically significant changes in health parameters.
- EpiCor Pets postbiotic elicited a significant reduction in the number of IL-4 positive cells versus control.
- At the target use rate of 7 mg/kg, EpiCor Pets produced a significantly lower percentage of IFN-γ positive cells vs control.
- Serum IgA levels were higher after 56-d of EpiCor Pets supplementation in dogs receiving both a low and high use rate of EpiCor Pets whereas no difference in IgA levels were observed in non-supplemented dogs between d 0 and 56.
- At d 14 saliva IgA was lower overall for dogs fed EpiCor Pets postbiotic but not different among treatments thereafter.
- No changes in serum IgE were observed between treatments or over time.

### Summary

- This study showed EpiCor Pets postbiotic to be safe at use rates well-exceeding (4-fold) the recommended target in adult dogs.
- Treatment induced changes in cytokines and immunoglobulins provide evidence that EpiCor Pets interacts to balance the T-cell helper responses which may be beneficial in dogs responding to common environmental challenges.

EPICOR® pets

[1] Palíc, D., et al. 2011. Iowa State University College of Veterinary Medicine (Internal Study, unpublished).

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*This information has been reviewed for products sold in the European Union & United Kingdom. For products marketed in other countries, please contact a local representative.*

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**If you would like more information, please contact your local EpiCor Pets representative.**

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EPICOR® pets
a Cargill brand



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**Effect of EpiCor fermentate on immune response, safety, and welfare of dogs**

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Iowa State University College of Veterinary Medicine

**Executive Summary:**

The effect of EpiCor fermentate made using *Saccharomyces cerevisiae* ("EpiCor") fermentation product based supplement on cell-mediated and antibody immune responses, safety and general welfare of dogs was studied at Iowa State University College of Veterinary Medicine in period from May 17 to July 27, 2011. Total of 30 adult beagle dogs (retired breeders, 18 female and 12 male) were randomly divided in three groups with similar weight and sex balance. Control (placebo) group had 3 males and 3 females (8.6 ± 2.1 kg); Low Dose (LD, 7 mg/kg/day of EpiCor) had 4 males and 8 females (8.5 ± 1.9 kg), and High Dose (HD, 29 mg/kg/day of EpiCor) had 5 males and 7 females (9.1 ± 2.8 kg). Weighted supplement capsules with EpiCor were administered to each dog according to the group orally in the morning. The groups were color-coded and administrators and evaluators were blinded until the completion of the experiment.

Health examination of the dogs was performed weekly by clinical exam, and complete blood and biochemistry laboratory (dog wellness panel) was performed bi-weekly. All dogs maintained good health and no clinically significant changes in health parameters were observed for the duration of the experiment. EpiCor treatment did not cause significant differences in clinical health parameters. Supplementation of up to 28 mg/kg/day for 8 weeks of EpiCor appears to be safe for use in dogs.

T-cell function assays (expression of CD4/CD8 cell surface markers; intracellular IFN-γ and IL-4 production) revealed significant reduction in number of IL-4 positive cells in EpiCor in vitro treatment. Furthermore, low dose of EpiCor caused significantly lower % of IFN-γ positive cells. The atopy in dogs is frequently related to high IL-4, and increased T-helper 2 type of cell mediated immune response. The supplementation with EpiCor has potential to balance the T-cell helper responses and reduce or prevent development of atopy in dogs.

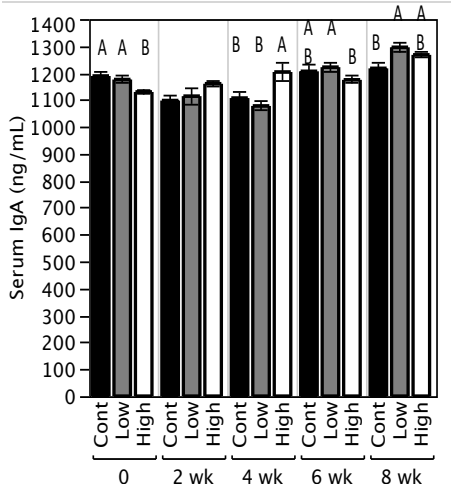
Antibody responses (serum and saliva levels of IgA and IgE) revealed significant increase of IgA in serum of all dogs treated with EpiCor, while serum IgE was not significantly changed. The atopy in dogs is commonly associated with low serum levels of IgA and high levels of IgE. Therefore, treatment with EpiCor has potential to balance antibody responses to potential allergens and reduce or prevent development of atopy in dogs.

Overall, it is our opinion that oral application of EpiCor at tested doses is safe. The EpiCor effect on the immune responses shows potential for it to be used as a supplement in the treatment and possibly prevention of atopy in dogs.

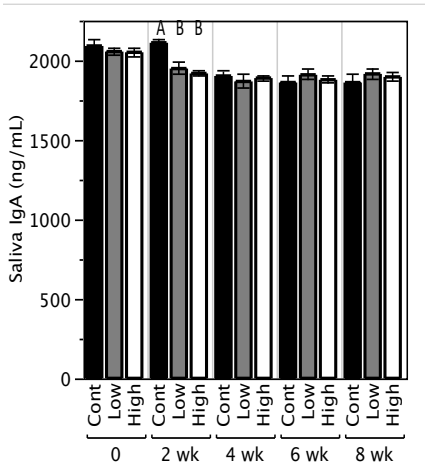
**Results for IgA - Effect of EpiCor supplement on IgA and IgE in dogs**

**Comparison between groups**

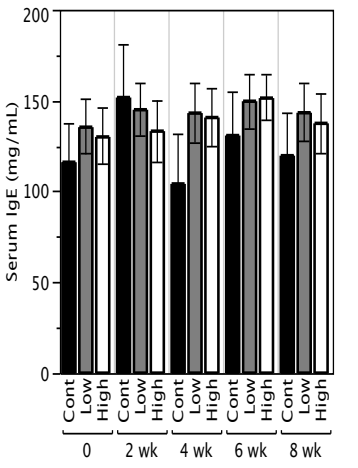
Serum IgA




Saliva IgA

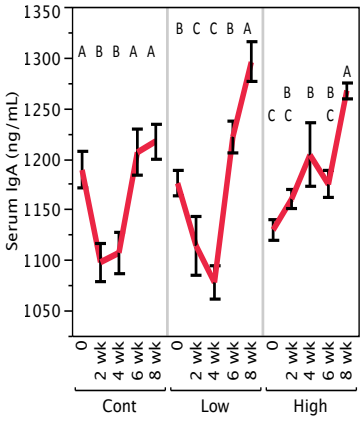



Serum IgE

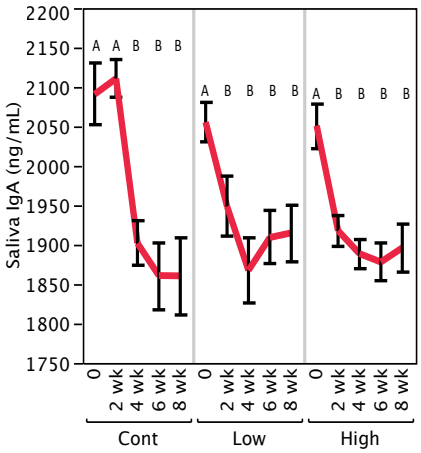



**Time course change within the same groups**

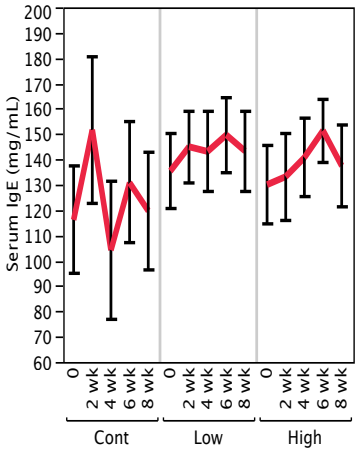
Serum IgA




Saliva IgA




Serum IgE




Atopy is associated with high IgE (specific to allergen) and low IgA in serum. Our results showed that EpiCor supplement significantly increased serum IgA in both Low and High groups. However saliva IgA decreased significantly in all groups even in the control. Serum total IgE showed only day-to-day variations. These data are promising to supplement EpiCor to alleviate canine atopic reaction at least regarding serum IgA. Both Low and High dose are effective to increase serum IgA especially high dose, which started from the lowest level and gradually increased serum IgA.