Antioxidant Benefits for Puppies and Adult Dogs

KEY POINTS:
- Previous studies show the beneficial effect of antioxidants on immune response1,2
- Antioxidant supplementation increased serum vitamin E concentrations and neutralizing antibodies3
- Antioxidant supplementation increased the number of memory T cells, which may provide longer-lived protection against infections3
- To provide antioxidant benefits, a food for puppies or adult dogs should exceed a vitamin E level of 445 IU/kg food4

TWO CLINICAL STUDIES SHOW THAT HIGH LEVELS OF ANTIOXIDANTS PROVIDE HEALTH BENEFITS TO BOTH PUPPIES AND ADULT DOGS:

STUDY I
- A total of 40 healthy puppies, seven weeks of age, were chosen for this six-week study2
- The study compared a puppy food containing high levels of antioxidants (including 500 IU vitamin E/kg food) to a typical grocery brand
- A combination vaccine for canine distemper (CDv) and parvovirus (CPv) was given on day 14 and a booster on day 28 of the study
- The effectiveness of the foods on immune function was assessed through vaccination titers
- Titers were measured using the canine parvovirus-2 hemagglutinin inhibition test and the canine distemper virus serum neutralization test

STUDY I RESULTS
- Puppies fed the antioxidant foods showed an improved response to the combination CDv and CPv vaccination
- Puppies fed the antioxidant food had significantly increased memory CD4+ lymphocytes and serum vitamin E concentrations
- Serum vitamin E concentrations significantly decreased over the course of the study in dogs fed the grocery brand food

STUDY II
- Forty healthy adult dogs were assigned to four equal groups in a complete random block design
- The four groups were then fed a food containing either 153, 293, 445 or 598 IU vitamin E/kg food
- The foods containing 293, 445 and 598 IU/kg of vitamin E also contained added vitamin C, beta-carotene and selenium for additional antioxidant activity

STUDY II RESULTS
- Normal dogs experience oxidative damage
- Increased amounts of dietary vitamin E can improve antioxidant status and modulate oxidative stress in vivo (as measured by blood alkenal levels)
- Significant reductions in serum alkenal levels occurred only when dietary vitamin E levels reached or exceeded 445 IU/kg food in dogs

CONCLUSION

The results of Study I indicate that a food with high levels of antioxidants including vitamin E, vitamin C, beta-carotene and selenium, improved the response to CDV and CPV vaccination and increased the number of memory T cells, which may provide longer-lived protection against infection. The decrease in vitamin E levels over the course of the study in dogs fed the grocery brand suggests that immune stress adversely affects serum E concentrations and that this can be prevented by vitamin E supplementation.

The results of Study II indicate that significant reductions in serum alkenal levels (an indicator of oxidative stress) occur only when dietary vitamin E levels reach a minimum of 445 IU/kg food.

NUTRITIONAL RECOMMENDATIONS

As these studies show, high levels of vitamin E can help ensure that puppies and adult dogs develop and maintain a healthy immune system to help protect them throughout life. The antioxidant test food used in Study I contained 500 IU vitamin E/kg food. Study II found that significant reductions in oxidative stress occurred only when vitamin E levels reached or exceeded 445 IU/kg food. Since vitamin E is generally regarded as safe with relatively low toxicity to both humans and animals, it makes prudent sense to recommend Science Diet® Puppy and Adult dry dog foods, which contain higher levels of vitamins E+C versus all leading brands.

REFERENCES