

## Propofol & Benzyl Alcohol: Safe for Cats, so Far

Propofol is formulated for anesthetic use in a lipid-based oil-in-water emulsion. A new formulation containing the original lipid emulsion with 2% benzyl alcohol has been introduced to the market to allow opened vials to be retained for a longer time. As cats are vulnerable to benzyl alcohol toxicity, a study was conducted evaluating the potential toxicity in cats administered a propofol emulsion containing the preservative. Preliminary data concluded the presence of 2% benzyl alcohol in the formulation of propofol did not cause significant morbidity and mortality under excessive and repeat dose conditions in cats. For the main study, 8 cats were administered 1% propofol containing 2% benzyl alcohol (PB); 8 cats were administered preservative-free propofol as a control (PC). Cats were anesthetized with propofol (8 mg/kg) 3 times at 48-

hour intervals in phase 1. The cats underwent 3 anesthetic procedures at 48-hour intervals in phase 2, with anesthesia maintained until 24 mg/kg had been administered. Regular hematological and biochemical analyses and clinical examinations were performed; cardiorespiratory function was monitored throughout anesthesia. Neurological examinations were performed daily for 7 days following phase 2. Cats were euthanized 7 days after phase 2 and postmortem examinations performed to assess organ toxicity. No clinically relevant differences between PB and PC were detected. The study revealed no additional effect when benzyl alcohol is added to propofol and is used at normal-to-high clinical doses in healthy cats.

### ■ Commentary

The original formulations of propofol

lacked preservatives, necessitating disposal within hours even after a single use. A propofol product that contains 2% benzyl alcohol as a preservative allows for multiple uses for up to 28 days (PropoFlo; abbott.com). Concerns regarding this new formulation are based on documented potential adverse effects of benzyl alcohol on feline blood and nervous systems. Based on the results of this study, propofol-containing benzyl alcohol (up to 48 mg/kg over 45 min–120 min) can be used safely in clinically healthy cats without the concern of long-term blood or nervous system side effects.—*Andrew Claude, DVM, DACVA*

### ■ Source

Evaluation of propofol containing 2% benzyl alcohol preservative in cats. Taylor PM, Chengelis CP, Miller WR, et al. *J FELINE MED SURG* 14:516-526, 2012.



## FOCUS

## Benefits of L-carnitine in Feline Weight Loss

This study examined the effect of L-carnitine supplementation on metabolic rate, fatty acid oxidation, lean body mass (LBM), nitrogen balance, and net weight loss on healthy overweight cats undergoing rapid weight loss. In phase 1, cats ( $n = 32$ ) were given unrestricted amounts of an energy-dense diet over 6 months. In phase 2, cats were divided into 4 study groups ( $n = 8/\text{group}$ ) and fed a reduced-energy diet containing 0, 50, 100, or 150  $\mu\text{g}$  of L-carnitine per gram of diet (unrestricted for 1 month, then restricted). Body weight, BCS, and dietary intake were measured weekly; mean weekly weight loss was  $\geq 1.3\%$  in all groups. Metabolic responses to calorie restriction were measured at baseline and on days 42 and 84 of the study and included resting energy expenditure (REE), and daily energy expenditure. While overall findings did not support a role for L-carnitine in promoting

weight loss in overweight cats, it did appear to have several positive metabolic effects. Cats receiving L-carnitine during the restricted feeding phase had a significantly higher REE:LBM ratio, respiratory quotient was significantly lower on day 42, and cats in the 100  $\mu\text{g}$  and 150  $\mu\text{g}$  L-carnitine groups had higher rates of fat oxidation. L-carnitine supplementation may be advantageous for overweight cats undergoing rapid weight loss and may also help guard against development of hepatic lipodosis.

### ■ Commentary

The study design corresponded to a common scenario of planned weight loss in overweight cats. Weight loss is safely achieved in cats regardless of whether diet is supplemented with L-carnitine, implying L-carnitine may not provide any advantage in a weight-loss program. However,

L-carnitine supplementation is associated with improved metabolism, including increased fat oxidation and decreased carbohydrate metabolism. This is more compatible with natural feline metabolism; therefore, despite no advantage in acceleration of weight loss, the addition of carnitine to a weight loss program may provide subtle advantages that may protect against pathologic states, such as feline hepatic lipodosis.—*Jennifer Ginn, DVM, MS, DACVIM*

### ■ Source

Influence of dietary supplementation with L-carnitine on metabolic rate, fatty acid oxidation, body condition, and weight loss in overweight cats. Center SA, Warner KL, Randolph JF, et al. *AM J VET RES* 73:1002-1015, 2012.