

The effects of *PCSO-524* extract on vital signs, complete blood count, and blood chemistry in clinically-healthy normal cats

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Keywords: *PCSO-524*, completed blood count, blood chemistry, adverse effects, cats

Introduction

Chronic pain is commonly caused by degenerative joint disease, which is underdiagnosed in cats. *PCSO-524* is an extract of *Perna canaliculus*, a known source of n-3 polyunsaturated fatty acids (PUFAs) with anti-inflammatory properties. Lipids extracted from the New Zealand green-lipped mussel (NZGLM) contain a complex mixture of mainly phospholipids (PL, 57–79%), triglycerides (TG, 10–25%), free fatty acids (FFA, 7–12%) and sterols (ST, 12–18%) (1). The total content of fatty acids (FA) contained in the *Perna canaliculus* lipid extract was 0.664 g/ml. The n-3 and n-6 PUFAs found in this lipid extract were EPA (20:5n-3) and DHA (22:6n-3), the two main n-3 PUFAs at low concentrations, stearidonic acid (SA, 18:4n-3), arachidonic acid (AA, 20:4n-6), α -linolenic acid (ALA, 18:3n-3), docosapentaenoic acid (DPA, 22:5n-3), heneicosapentaenoic acid (HPA, 21:5n-3) and some others in levels less than 0.50% (2). *PCSO-524* is a source of n-3 polyunsaturated fatty acids with anti-inflammatory properties commonly used to treat osteoarthritis in human beings and dogs. The purpose of this study was to study the effects of *PCSO-524* extract on vital signs, completed blood count, and blood chemistry in clinically-healthy normal cats.

Materials and Methods

Mixed breeds cats, aged 1 to 5 years, with body weights of 3 to 5 kg were studied. These cats were examined by a veterinarian and determined to be in good physical health and were divided into three groups (n=7); administered 1x the recommended maximum label dose, 2x the recommended maximum label dose (four soft gel capsules per day) and 3x the recommended maximum label dose (six soft gel capsules per day), with daily food for 28 days. They were acclimatized for 4 weeks before the beginning of the study. The animal caretaker provided basic husbandry to the cats (e.g., feeding and cleaning

of litter boxes). Cats were fed with commercial dry adult cat food once a day and given fresh water ad libitum. Cages and litter boxes were cleaned at least once daily. Cats were allowed to run freely for at least 10 to 15 min per day while their cages were cleaned and were returned to their cages afterward. Individual feline health and physical examinations, including vital signs, ocular, nervous, musculoskeletal, and integumentary systems, were conducted. Signs of illness and behavioral changes were recorded, as were changes in hematology and blood chemistry values. Food and water consumption, and body weight were measured every day. The study was approved by the Chulalongkorn University Animal Care and Use Committee (IACUC).

Results and Discussion

No abnormality of the ocular, nervous or musculoskeletal systems was observed. The integumentary system appeared to be softer and shinier. No signs of illness or behavioral changes were observed, and there were no statistical differences in body weight, body temperature or other vital signs at any time point. All cats appeared to demonstrate regular food intake and activity. Complete blood count (CBC) and blood chemistry results were within the normal reference range. Creatinine levels on day 14 and 28 in one tablet per day were significantly lowered than day 0. However, at the dose of six capsules per day (three times the normal recommended dose in humans), the feline blood samples revealed lipemia. This resolved 108 days after cessation of *PCSO-524* administration (Table 1).

The results of this study demonstrate that CBC and blood chemistry levels were within the normal reference ranges among clinically healthy normal cats administered two to four capsules of *PCSO-524* per day for 28 days. At a dose of six capsules per day, feline blood samples revealed lipemia, which may have been due to the fact that *PCSO-524* comprises triglycerides (TG, 10-25%), free fatty

acids (FFA, 7-12%) and sterols (ST, 12-18%) (1). Supplementation of *PCSO-524* at two to four capsules per day for 28 days in clinically healthy normal cats has no adverse effects. Further study is needed to investigate the role of *PCSO-524* in geriatric cats with DJD and other degenerative diseases in the future.

Acknowledgements

The *PCSO-524* were supported by Pharmed International Company Ltd. The author would like to thank Miss Kanokgarn Chaiyasup, Watinee Saowiang, Sirikarn Saetae, and Arisa Tatongjai for their help in the study.

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Table 1 Complete blood count and blood chemistry levels in cats receiving one tablet of *PCSO-524* twice per day on days 0, 14 and 28 of treatment

Parameters	Normal Value	Results ($\bar{x} \pm \text{SEM}$)		
		Day 0	Day 14	Day 28
ALT (SGPT) units	30-80	53 \pm 3.91	ND	50.57 \pm 5.26
Alk. phosphatase units	9-42	26.66 \pm 3.65	ND	39.07 \pm 9.78
BUN mg%	15-35	25.33 \pm 0.74	ND	24.33 \pm 0.59
Creatinine mg%	0.8-1.8	1.43 \pm 0.14	1.07 \pm 0.14 [‡]	1.16 \pm 0.2 [†]
Cholesterol mg/dl	95-130	110.86 \pm 12.46	ND	113.86 \pm 10.66
Triglycerides mg/dl	20-100	ND	ND	84.29 \pm 13.62

Kaneko et al., 1997; ND = not determined

[†] p<0.05 when compared between day 0 and day 28 of treatment [‡] p<0.01 when compared between day 0 and day 14 of treatment

Table 2 Complete blood count and blood chemistry levels in cats receiving two tablets of *PCSO-524* twice per day on days 0, 14 and 28 of treatment

Parameters	Normal Value	Results ($\bar{x} \pm \text{SEM}$)		
		Day 0	Day 14	Day 28
AST (SGOT) units	10-59	19.26 \pm 4.45	23.2 \pm 4.04	25.2 \pm 4.76
ALT (SGPT) units	30-80	15.64 \pm 3.28	26.96 \pm 5.87	23.8 \pm 6.93
Alk. phosphatase units	9-42	45.22 \pm 12.87	53.76 \pm 19.53	44.66 \pm 6.34
BUN mg%	15-35	25.74 \pm 1.01	24.32 \pm 1.65	23.7 \pm 1.09
Creatinine mg%	0.8-1.8	1.6 \pm 0.21	1.46 \pm 0.12	1.54 \pm 0.09
Cholesterol mg/dl	95-130	116.6 \pm 13.06	121 \pm 8.22	121 \pm 7.48
Triglycerides mg/dl	20-100	72.6 \pm 14.01	76 \pm 14.11	78.2 \pm 18.53

Kaneko et al., 1997.