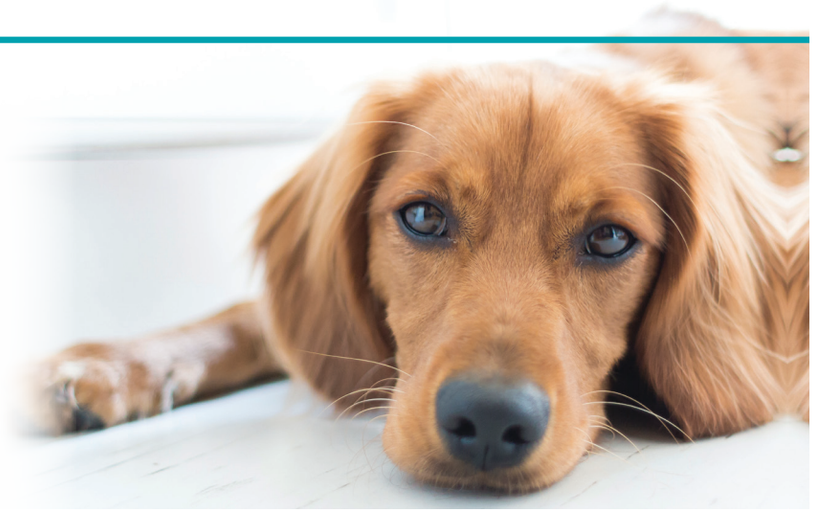
PURE ANIMAL WELLBEING
By BLACKMORES



PAW COMPLETE CALM

MULTIVITAMIN CHEWS WITH TRYPTOPHAN

PAW Complete Calm is a tasty fish and chickpea based chew that contains tryptophan to help reduce stress-related behaviour and anxiety-induced aggression. In addition, it contains B group vitamins, and a rich source of multivitamins and nutrients to support general health, and nervous function in dogs.

BENEFITS:

- High levels of tryptophan to help relieve stress & anxiety-induced aggression.
- B group vitamins (including B1, B5 and B6) to help support healthy nervous function.
- Key vitamins and minerals to help maintain a healthy immune system.
- Contains DHA to support cognitive health.
- Palatable tasty chew format for ease of administration.

WHEN TO RECOMMEND:

Ideal for dogs that are:

- Suffering from separation anxiety when left alone.
- Showing fearfulness during thunderstorms, or when exposed to loud noises.
- Demonstrating general nervousness, stress or anxiety towards unfamiliar places or people.
- During periods of transition e.g. moving house, new pet, new baby

Each PAW Complete Calm Chew contains:

Active ingredients	Small Dog Chews (2.5 g/chew)	Medium-large Dog Chews (5 g/chew)
Tryptophan	90 mg	180 mg
Pantothenic acid (B5)	1.57 mg	3.14 mg
Thiamine (B1)	0.23 mg	0.45 mg
Pyridoxine (B6)	0.145 mg	0.29 mg

Dosage:

Complete Calm Small Dog Dosage **Size:** 75 g Tub (approx. 30 chews)	
Body weight	**Daily Dose**
1 - 4.9 kg	½ a chew
5 - 9.9 kg	1 chew
10 - 15 kg	1 ½ chews

Complete Calm Medium-large Dog Dosage **Size:** 300 g Tub (approx. 60 chews)	
Body weight	**Daily Dose**
1 - 4.9 kg	½ a chew
5 - 14.9 kg	1 chew
15 - 29.9 kg	2 chews
30+ kg	3 chews

Administration: Feed daily

Size: 75g Tub (Approx. 30 x 2.5g chews) & 300g Tub (Approx. 60 x 5g chews)

Warnings/Safety: For animal consumption only.

EDUCATION

Tryptophan

Tryptophan is an essential amino acid that is present in small quantities in a broad range of animal and plant proteins such as meat, oats and dairy. This means that it cannot be synthesised in the body, but instead must be obtained through food sources and supplementation. Given that tryptophan is a precursor to the B vitamin niacin, neurotransmitters such as serotonin, and hormones such as melatonin, it is also critical to mammalian life.[1]

Tryptophan was first isolated from the milk protein casein in 1901 and until the late 1980s, was researched and marketed widely as a supplement to aid sleep.[3,4] The scientific interest centres on its role as a precursor for serotonin, the 'mood' neurotransmitter in the CNS that regulates sleep, appetite, memory, learning, sexual behaviour, muscle contraction, temperature and endocrine regulation, and depression.[5] Hence supplemental tryptophan and its metabolite 5-hydroxytryptophan (5-HTP) have long been studied as mood modifiers in animal and human behavioural and neuropsychological research.

After intestinal absorption, most of the tryptophan is converted in the liver to eventually form niacin, or 5-HTP in other cells, and finally, to serotonin. However, if this serotonin conversion occurs outside the brain, neurochemistry is not affected. In fact, at most only 3% of a tryptophan dosage is likely to be converted to serotonin in the brain.[6] The availability of tryptophan to the brain largely depends on the composition of the ingested food, whilst transport across the blood–barrier is also affected by breed, sex, social status, age, activity, and level of stress.[5]

For access to the brain, tryptophan shares the same carrier as other large neutral amino acids (LNAAs), which usually appear with it in food in much higher proportions. This carrier competition therefore means that consumption of a high protein meal will decrease the ratio of tryptophan to LNAAs, potentially lowering serotonin synthesis.

Conversely, a high carbohydrate intake with higher tryptophan:LNAA ratios will result in higher serotonin levels.[5,7]

Tryptophan-supplemented, low-protein diets are associated with lower dominance aggression and territorial aggression behaviour scores in dogs[8]

The study featured 11 dogs with dominance aggression, 11 dogs with territorial aggression, and 11 dogs with hyperactivity. Each group was fed four different diets for one week each, in a randomised order. Two diets had low protein content, whilst the other two had high protein content. Two of the diets (one low-protein and one high-protein), were supplemented with tryptophan. Owners scored their dog's behaviour daily by using customised behavioural scoring sheets.

Tryptophan-supplemented low-protein diets were associated with significantly lower behavioural scores than low-protein diets without tryptophan supplementation. For dominance aggression, behavioural scores were highest in dogs fed the un-supplemented high-protein diet.

References:
1. Hodgson JM. 2011. Protein. Food & Nutrition, 3rd edn. Sydney: Allen & Unwin, **2.** Hopkienns FG et al. 1901. A contribution to the chemistry of proteids: Part 1. A preliminary study of a hitherto undescribed product of tryptic digestion. J Physiol. (Lond), 27(4–5):418–28. **3.** Wyatt RJ et al. 1970. Effects of L-tryptophan (a natural sedative) on human sleep. Lancet, 2(7678):842–6. **4.** Schneider-Helmert D et al. 1986. Evaluation of L-tryptophan for treatment of insomnia: a review. Psychopharmacol (Berl.), 89(1):1–7. **5.** Bosch G et al. 2007. Impact of nutrition on canine behaviour: current status and possible mechanisms. Nutr Res Rev., 20(2):180–94. **6.** Filippini GA et al. 1996. Recent advances in tryptophan research, tryptophan and serotonin pathways. Exp Biol Med., 398:1–762. **7.** Grimmett A et al. 2005. Calmatives for the excitable horse: a review of L-tryptophan. Vet J., 170(1):24–32. **8.** DeNapoli et al. 2000. Effect of dietary protein content and tryptophan supplementation on dominance aggression, territorial aggression, and hyperactivity in dogs. Journal of the American Veterinary Medical Association. 217. 504-8.