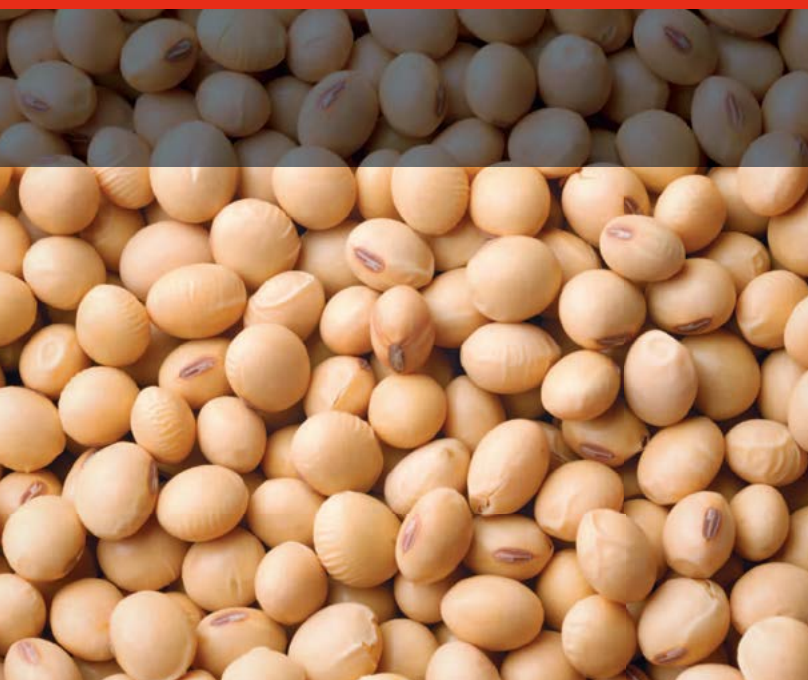


宠物食品中的大豆



热门话题

对宠物而言，大豆十分有营养价值，但宠物主人经常会质疑这种食物原料的品质及其对健康的作用。

普瑞纳研究院将会提供科学事实来帮助您了解有关宠物食品营养的讨论话题。

let's
takeback
the conversation.

了解更多关于营养效用的信息，请访问

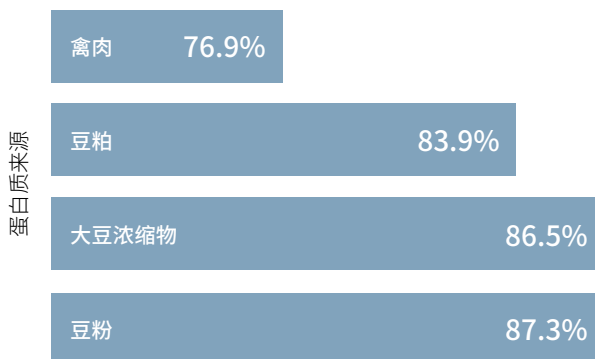
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为什么在宠物食品中添加大豆？

没有任何一种单一的蛋白质来源可以提供宠物合成蛋白质所需的所有必需氨基酸，并且将这些氨基酸维持在合适的相对水平。大豆蛋白是一种优质的蛋白质来源，能够为犬猫提供必需氨基酸，从而达到全面均衡的饮食。

许多蛋白质原料都是由大豆制成的——包括豆粕、豆粉和大豆浓缩物，它们都很容易消化。虽然研究结果可能会有所不同，但大豆蛋白的消化率可以匹敌甚至超过以肉类为基础的蛋白质来源。¹⁻⁴

蛋白质消化率 (%)



大豆如何促进宠物健康？

大豆含异黄酮，异黄酮是一种天然抗氧化剂，对宠物的健康有益。研究表明，富含异黄酮的饮食对体重管理和代谢有积极影响，包括：

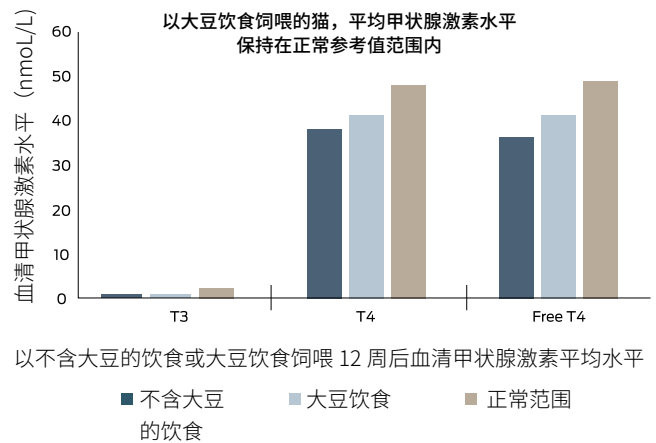
- 与饲喂同等能量的不含大豆的对照组相比，以高于维持能量 25% 的含大豆饮食饲喂犬，犬体内的脂肪堆积较对照组明显减少，体重增加量减少 50%。⁵⁻⁷
- 可使雄性去势犬的能量代谢显著增加。⁷
- 有助于降低氧化应激反应，这可能有助于降低超重犬患关节炎和糖尿病的风险。⁷
- 可帮助维持猫的健康体重。⁸
- 可改善超重犬的胰岛素清除率（对犬和人类来讲，胰岛素清除率下降和血液胰岛素水平升高均与慢性疾病有关）。^{9,10}

水解大豆蛋白还有助于减少犬和猫的食物过敏现象——蛋白质变小且结构发生改变，可降低引发不良免疫反应的可能性。^{11,12}

异黄酮对宠物是否安全？

异黄酮的许多健康益处源于其雌激素样结构。然而，根据异黄酮活性结构的代谢和生物利用率，其作用效果对于不同物种和个体也是不同的。¹³⁻¹⁷ 犬和猫代谢异黄酮的方式与人类或其他动物有所差异。对家养犬猫进行的研究表明：

- 在两项研究检测中，当含大豆的宠物食品中的异黄酮浓度逐渐升高时，作者假设在这种条件下，异黄酮可能会导致宠物出现“生物学效应”，但研究并未发现或检测出上述影响。^{18,19}
- 对犬猫进行了长达一年的研究，结果表明，每天摄入大量大豆并不会产生不良的临床影响，除非其含量过高（约 100 ~ 500 mg/kg/天）。^{8,20-22}
- 连续 3 个月以大豆饮食（异黄酮含量比目前宠物食品中报道的最高含量还要高 33%）饲喂的猫，猫的血清甲状腺激素水平仍维持在实验室的正常参考值范围内，未见甲状腺激素过量的异常临床症状。^{19,23}

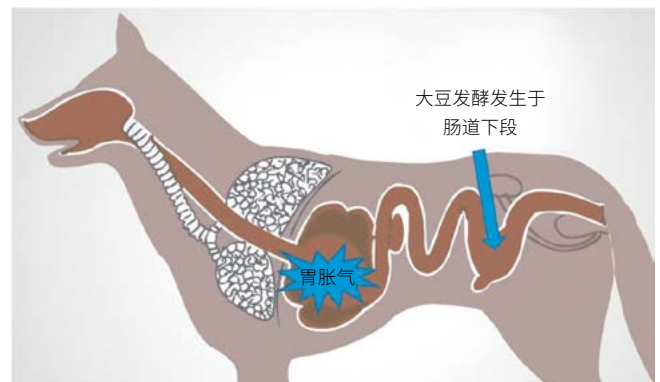


以不含大豆的饮食或大豆饮食饲喂 12 周后血清甲状腺激素平均水平

大豆是否会引引起犬胃胀气？

大豆含有少量膳食纤维，这些膳食纤维由大肠细菌消化；在某些动物中，这一过程会导致胃肠道胀气。这种副作用使人们误认为，大豆发酵会导致犬发生胃扭转（GDV）或胃胀气。然而，膳食纤维发酵发生于大肠——早已远离胃部。

多项研究证实，胃胀气的犬胃内滞留的空气不是来自于发酵大豆或其他食物。²⁴⁻²⁶



参考资料

- Clapper, G.M., Grieshop, C.M., Merchen, N.R., Russett, J.C., Brent, J.L., & Fahey, G.C. (2001). Ileal and total tract nutrient digestibilities and fecal characteristics of dogs as affected by soybean protein inclusion in dry extruded diets. *Journal of Animal Science*, 79, 1523-1532.
- Huber, T.L., LaFlamme, D., Comer, K.M., & Anderson, W.H. (1994). Nutrient digestion of dry dog foods containing plant and animal proteins. *Canine Practice*, 19, 11-13.
- Kendall, P.T., & Holme, D.W. (1982). Studies on the digestibility of soya bean products, cereal, cereal and plant by-products in diets of dogs. *Journal of the Science of Food and Agriculture*, 33(9), 813-822.
- Zuo, Y., Fahey G.C., Merchen, N.R., & Bajjalieh, N.L. (1996). Digestion responses to low oligosaccharide soybean meal by ileally-cannulated dogs. *Journal of Animal Science*, 74, 2441-2449.
- Pan, Y.L. (2006). Use of soy isoflavones for weight management in spayed/neutered dogs. *Federation of American Societies for Experimental Biology Journal*, 20, A854-A855.
- Pan, Y.L. (2007). Effects of isoflavones on body fat accumulation in neutered male and female dogs. *Federation of American Societies for Experimental Biology Journal*, 21(5), A373.
- Pan, Y.L. (2012). Soy germ isoflavones supplementation reduced body fat accumulation and enhanced energy metabolism in dogs. *Journal of Veterinary Internal Medicine*, 26(3), 812-813. Abstract.
- Cave, N.J., Backus, R.C., Marks, S.L., & Klasing, K.C. (2007). Oestradiol, but not genistein, inhibits the rise in food intake following gonadectomy in cats, but genistein is associated with an increase in lean body mass. *Journal of Animal Physiology and Animal Nutrition*, 91, 400-410.
- Kim, M.K., Reaven, G.M., Chen, Y.D., Kim, E., & Kim, S.H. (2015). Hyperinsulinemia in individuals with obesity: Role of insulin clearance. *Obesity*, 23(12), 2430-2434.
- Larson, B.T., Lawler, D.F., Spitznagel, E.L., & Kealy, R.D. (2003). Improved glucose tolerance with lifetime diet restriction favorably affects disease and survival in dogs. *Journal of Nutrition*, 133(9), 2887-2892.
- Cave, N.J. (2006). Hydrolyzed protein diets for dogs and cats. *Veterinary Clinics of North America Small Animal Practice*, 36(6), 1251-1268.
- Puigdemont, A., Brazis, P., Serra, M., & Fondati, A. (2006). Immunologic responses against hydrolyzed soy protein in dogs with experimentally induced soy hypersensitivity. *American Journal of Veterinary Research*, 67(3), 484-488.
- Gu, L., House, S.E., Prior, R.L., Fang, N., Ronis, M.J.J., Clarkson, T.B., Wilson, M.E., & Badger, T.M. (2006). Metabolic phenotype of isoflavones differ among female rats, pigs, monkeys, and women. *Journal of Nutrition*, 135(5), 1215-1221.
- Redmon, J.M., Shrestha, B., Cerundolo, R., & Court, M.H. (2016). Soy isoflavone metabolism in cats compared with other species: Urinary metabolite concentrations and glucuronidation by liver microsomes. *Xenobiotica*, 46(5), 406-415.
- Whitehouse-Tedd, K.M., Cave, N.J., Ugarte, C.E., Waldron, L.A., Prasain, J.K., Arabshahi, A., ... Thomas, D.G. (2014). Isoflavone metabolism in domestic cats (*Felis catus*): Comparison of plasma metabolites detected after ingestion of two different dietary forms of genistein and daidzein. *Journal of Animal Science*, 91(3), 1295-1306.
- Setchell, K.D., Brown, N.M., Zhao, X., Lindley, S.I., Heubi, J.E., King, E.C., & Messina, M.J. (2011). Soy isoflavone phase II metabolism differs between rodents and humans: implications for the effect on breast cancer risk. *American Journal of Clinical Nutrition*, 94(5), 1284-1294.
- Xiao, Y., Zhang, S., Tong, H., & Shi, S. (2018). Comprehensive evaluation of the role of soy and isoflavone supplementation in humans and animals over the past two decades. *Phytotherapy Research*, 32(3), 384-394.
- Cerundolo, R., Court M.H., Hao, Q., & Michel, K.E. (2004). Identification and concentration of phytoestrogens in commercial dog foods. *American Journal of Veterinary Research*, 65(5), 592-596.
- Court, M. H., & Freeman, L. M. (2002). Identification and concentration of soy isoflavones in commercial cat foods. *American Journal of Veterinary Research*, 63, 181-185.
- Bell, K. (2009). *The role of dietary isoflavones in the reproductive and hepatic systems of domestic and non-domestic feline species* (Doctoral dissertation). Retrieved from <https://mro.massey.ac.nz/bitstream/handle/10179/4052/02/whole.pdf>
- Cerundolo, R., Michel, K.E., Reisner, I.R., Phillips, L., Goldschmidt, M., Court, M.H., ... Shofer, F.S. (2009). Evaluation of the effects of dietary soy phytoestrogens on canine health, steroidogenesis, thyroid function, behavior and skin and coat quality in a prospective controlled randomized trial. *American Journal of Veterinary Research*, 70(3), 353-360.
- McClain, R.M., Wolz, E., Davidovich, A., Pfannkuch, F., & Bausch, J. (2005). Subchronic and chronic safety studies with genistein in dogs. *Food Chemistry and Toxicology*, 43(10), 1461-1482.
- White, H.L., Freeman, L.M., Mahony, O., Graham, P.A., Hao, Q., & Court, M.H. (2004). Effect of dietary soy on serum thyroid hormone concentrations in healthy adult cats. *American Journal of Veterinary Research*, 65, 586-591.
- Raghavan, M., Glickman, N.W., McCabe, G., Lantz, G., & Glickman, L.T. (2004). Diet-related risk factors for Gastric Dilatation-Volvulus in dogs of high-risk breeds. *Journal of the American Animal Hospital Association*, 40(3), 192-203.
- Raghavan, M., Glickman, N.W., & Glickman, L.T. (2006). The effect of ingredients in dry dog foods on the risk of Gastric Dilatation-Volvulus in dogs. *Journal of the American Animal Hospital Association*, 42(1), 28-36.
- Yamka, R.M., Harmon, D.L., & Schoenher, W.D. (2006). In vivo measurement of flatulence and nutrient digestibility in dogs fed poultry by-product meal, conventional soybean meal and low-oligosaccharide low-phytate soybean meal. *American Journal of Veterinary Research*, 67, 88-94.