FORTIFLORA®
N°1 IN SCIENTIFIC STUDIES

behind its active strain SF68[1], among all strains approved in EU for dogs and cats

PURINA®

PRO PLAN®

FortiFlora®

15+
YEARS
OF SCIENTIFIC
EXCELLENCE[1]



[1] *Common database including MEDLINE and others between 2010 – 2023*

The role of probiotics in veterinary medicine

In recent years, awareness and use of probiotics in small animal veterinary practice has increased to help support many different conditions. This increase is linked to the understanding that the **gastrointestinal (GI)** tract is the largest immune organ of the body, containing **70%**[1] of all immune cells, which are located in the **gut-associated lymphoid tissue (GALT)**.

The GI tract is also home to billions of different **intestinal microbiota**, which play a crucial role modulating both innate and acquired immunity[2].

The intestinal microbiota needs to interact with the gut epithelial cells for proper immune regulation and maintenance of **intestinal homeostasis**[2].

Supplementing with probiotics can not only help prevent harmful bacteria from colonising the intestines, but also support the body's immune system through an immunomodulatory effect that is **strain-specific**[3].

PRO PLAN® FortiFlora®. An effective probiotic for cats and dogs

***Enterococcus faecium* (SF68)** strain belongs to a large genus of lactic acid bacteria that has gained respect for remarkable safety and efficacy use as probiotics in humans and animals[4].

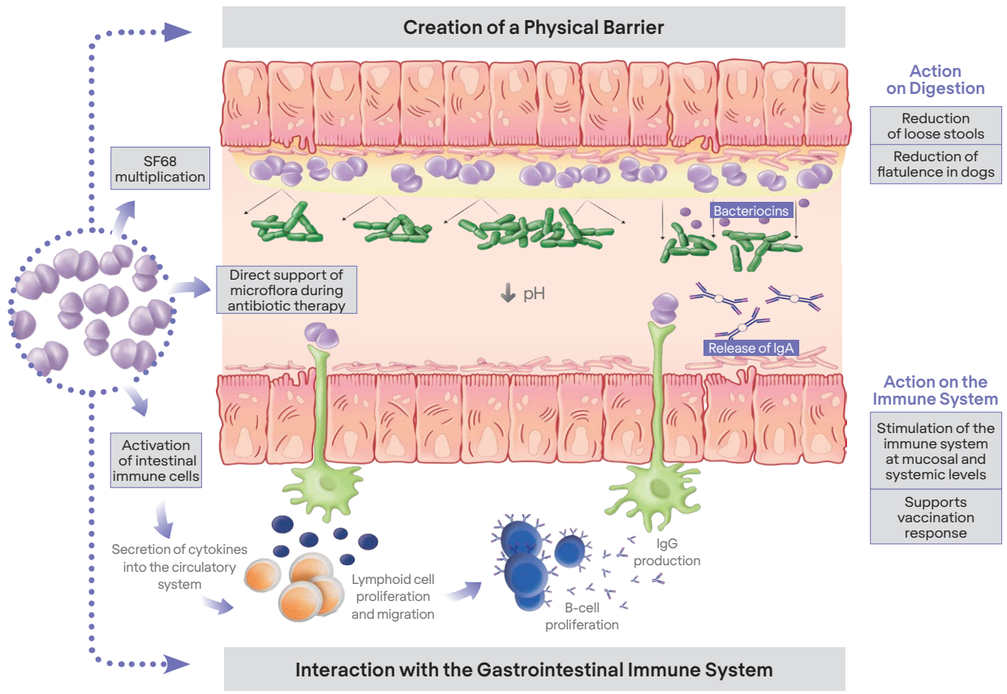
***Enterococcus faecium* SF68 NCIMB 10415 (4b1705) is the active strain of PRO PLAN® FortiFlora®**, a probiotic approved by the European Commission (under Regulation (EU) No 1061/2013) to be safely administered to both cats and dogs.

PRO PLAN® FortiFlora® (SF68) has many proven benefits when administered orally to cats and dogs of all ages from weaning. Its unique and proprietary microencapsulation technique ensures that the bacteria in FortiFlora remain viable and that the product can be used with confidence in its efficacy.



1. Vighi G, Marcucci F, Sensi L, et al. 2008. Allergy and the gastrointestinal system. Clin Exp Immunol. 153(S1), 3–6.
2. Christopher CL. 2018. Enteric Immunity Happy Gut, Healthy Animal. Vet Clin Food Anim. 34. 1–18.
3. Ohashi Y, Kazunari U. 2009. Health-beneficial effects of probiotics: Its mode of action. Anim Sci J. 80,361-371
4. Holzapfel W, Arini A, Aeschbacher M, et al. 2018. *Enterococcus faecium* SF68 as a model for efficacy and safety evaluation of pharmaceutical probiotics. Benef Micr. 9(3):375-388

Through its different modes of action, FortiFlora® helps promote gut health and microbiota balance whilst helping support a healthy immune system.



PURINA® PRO PLAN® FortiFlora®

HOW AND WHEN TO USE FORTIFLORA®

Recommended for	Administration guidelines
GASTROINTESTINAL DISTURBANCES	
Gastrointestinal disturbances and loose stools associated with microflora imbalance Poor faecal quality	Give 1 sachet of FortiFlora® every day until at least 7 days after the return to normal stool quality
Reduction of flatulence in dogs	Give 1 sachet of FortiFlora® every day for at least 2 weeks
LOOSE STOOLS	
Loose stools associated with stress	Give 1 sachet of FortiFlora® every day, 3 days before the stressful event, during the whole period of stress and until at least 3 days after the end of the stressful event
Loose stools associated with antibiotic use	Give 1 sachet of FortiFlora® every day during the antibiotic use and until 7 days after the last dose of antibiotic. Ideally, give Fortiflora® at least 2 hours before or after the antibiotic administration
Loose stools associated with diet change	Give 1 sachet of FortiFlora® a day, from 3 days before the start of the diet transition until 7 days after the pet has been fed entirely with the new diet
IMMUNE FUNCTION	
Helps support a healthy immune system	Give 1 sachet of FortiFlora® every day, for at least 30 days
PALATABILITY ENHANCEMENT	
For a poor appetite	Add 1 sachet of FortiFlora® daily to the regular food as long as palatability enhancement is required



30 sachets x 1g for long-term needs

7 sachets x 1g for short-term needs

Recommended for cats and dogs of all ages (from weaning)

FORTIFLORA®
N°1 IN SCIENTIFIC STUDIES

behind its active strain SF68*, among all strains approved in EU for dogs and cats

15+ YEARS OF SCIENTIFIC EXCELLENCE

2002
- Investigation of health beneficial effects of SF68 in dogs[1]

2003
- SF68 helps support immune function in young dogs[2]

2005
- SF68 helps enhance the immune response to *Giardia intestinalis* in mice[3]

2006
- Effect of SF68 on faecal microflora in puppies[4]
- Effect of SF68 on immune status and faecal microflora in kittens[5]
- Effect of SF68 on prevention of naturally occurring diarrhoea in kittens[6]

2007
- Effect of SF68 on faecal microflora and faecal output in kittens[7]
- **Effect of SF68 on immune function in cats[8]**

2009
- Influence of SF68 on giardiasis in dogs[9]
- **Pilot study to evaluate the effect of SF68 on cats with latent feline herpesvirus-1[10]**

2011
- **Effect of SF68 on diarrhoea in cats and dogs housed in an animal shelter[11]**

2012
- **Effects of SF68 on stress diarrhoea in dogs[12]**
- **SF68 helps reduce flatulence in dogs[13]**

2017
- **Effect of SF68 in cats administered amoxicillin-clavulanate[14]**
- **Evaluation of SF68 in shelter dogs treated with metronidazole[15]**

2018
- SF68 as a model for efficacy and safety evaluation of pharmaceutical probiotics[16]

2019
- SF68 as adjunctive therapy for oclacitinib-responsive adult atopic dermatitis in dogs[17]
- Effect of probiotic *Enterococcus faecium* SF68 on liver function in healthy dogs[18]

2021
- 5 ongoing studies in the fields of Dermatology, Immunity, Reproduction and Renal

Enterococcus faecium SF68
MAKING HISTORY THROUGH REMARKABLE SCIENCE

*_Enterococcus faecium_ SF68 NCIMB 10415 (4b1705)

1. Cavadini and Dowling. 2002. Investigation of health beneficial effects of _Enterococcus faecium_ SF68 in dogs. Nestlé Purina internal report.
2. Benyacoub J, _et al._ 2003. Supplementation of food with _Enterococcus faecium_ (SF68) stimulates immune functions in young dogs. _Journal of Nutrition_ **133(4)**, pp. 1158-1162.
3. Benyacoub J, _et al._ 2005. _Enterococcus faecium_ SF68 enhances the immune response to Giardia intestinalis in mice. _J Nutr._ **135(5)**:1171-6.
4. Czarnecki-Maulden G. 2006. Effect of _Enterococcus faecium_ SF68 on faecal microflora in puppies. Purina Internal Report.
5. Czarnecki-Maulden G. 2006. Effect of _Enterococcus faecium_ SF68 on immune status and faecal microflora in kittens. Purina Internal Report.
6. Czarnecki-Maulden G. 2006. Effect of _Enterococcus faecium_ SF68 on prevention of naturally occurring diarrhoea in kittens. Purina Internal Report.
7. Czarnecki-Maulden G and Jackson J. 2007. Effect of _Enterococcus faecium_ SF68 on faecal microflora and faecal output in kittens. Purina Internal Report.
8. Veir JK, _et al._ 2007. Effect of supplementation with _Enterococcus faecium_ (SF68) on immune function in cats. _Vet. Ther._ **8(4)**:229-238.
9. Simpson KW, _et al._ 2009. Influence of _Enterococcus faecium_ SF68 probiotic on giardiasis in dogs. _J Vet Intern Med._ **23(3)**:476-81.
10. Lappin MR, _et al._ 2009. Pilot study to evaluate the effect of oral supplementation of _Enterococcus faecium_ SF68 on cats with latent feline herpesvirus 1. _Journal of Feline Medicine and Surgery_ **11(8)**, pp. 650-654.
11. Bybee SN, _et al._ 2011. Effect of the probiotic _Enterococcus faecium_ SF68 on presence of diarrhoea in cats and dogs housed in an animal shelter. _J Vet Intern Med._ **25(4)**:856-60.
12. Gore AM, Reynolds A. 2012. Effects of _Enterococcus faecium_ on stress diarrhoea. ACVIM Forum Proceedings; 453.
13. Waldron M, _et al._ (2012). Supplementation with _Enterococcus faecium_ reduces flatulence in dogs. 16th European Society of Veterinary Comparative Nutrition (ESVCN) Congress. September 2012.
14. Torres-Henderson C, _et al._ 2017. Effect of _Enterococcus faecium_ Strain SF68 on Gastrointestinal Signs and Faecal Microbiome in Cats Administered Amoxicillin-Clavulanate. _Top Companion Anim Med._ **32(3)**:104-108.
15. Fenimore A, _et al._ 2017. Evaluation of Metronidazole with and without _Enterococcus faecium_ SF68 in shelter dogs with diarrhoea. _Topics in Companion Animal Medicine,_ **32(3)**, pp. 100-103.
16. Holzapfel W, _et al._ 2018. _Enterococcus faecium_ SF68 as a model for efficacy and safety evaluation of pharmaceutical probiotics. _Beneficial Microbes,_ **9(3)**:375-388.
17. Yamazaki C, _et al._ 2019. Pilot evaluation of _Enterococcus faecium_ SF68 as adjunctive therapy for oclacitinib responsive adult atopic dermatitis in dogs. _J Small Anim Pract._ Aug;**60(8)**:499-506.
18. Lucena. 2019. Effect of probiotic _Enterococcus faecium_ SF68 on liver function in healthy dogs. Journal of Veterinary Internal Medicine – Wiley Online Library.

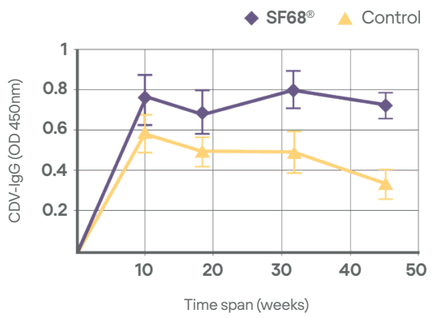
PRO PLAN® FortiFlora®. Outstanding results in the spotlight

Supplementation of food with *Enterococcus faecium* (SF68®) stimulates immune functions in young dogs. *(Benyacoub J et al. 2003)*[1]

Method: Puppies were fed a daily dose of placebo or *E faecium* SF68 probiotic from weaning to one year of age. They were vaccinated using a live attenuated canine distemper virus (CDV) vaccine at 9 and 12 weeks of age. Faecal and blood samples collected at regular intervals were analysed for faecal IgA, circulating IgG and IgA and proportions of lymphoid cell subsets.

Results: Faecal IgA and CDV vaccine-specific circulating IgG and IgA were higher in the probiotic versus the control group. The proportion of mature B cells (CD21+/major histocompatibility complex (MHC) class II+) was also greater in the probiotic group.

Conclusion: These results confirm a supportive effect of *E faecium* SF68 at both mucosal and systemic levels in puppies, which may help improve protective immune responses against various pathogens during the critical weaning period, as well as in later life.



Effect of supplementation with *Enterococcus faecium* (SF68®) on immune functions in cats. *(Veir JK, et al. 2007)*[2]

Method: Kittens were given either *E faecium* SF68 or a placebo daily from 7 weeks of age for 20 weeks. Response to modified live combination vaccine (for FHV-1, calicivirus and FPV virus) given at 9 and 12 weeks of age was monitored.

Results: The percentage of CD4+ lymphocytes was significantly higher in the SF68 group.

Conclusion: The increase in CD4+ lymphocytes demonstrates systemic immune-modulating effects by *E faecium* SF68 probiotic in kittens.

Pilot study to evaluate the effect of oral supplementation of *Enterococcus faecium* SF68® on cats with latent Feline Herpesvirus-1. *(Lappin MR, et al. 2008)*[3]

Method: 12 cats with chronic FHV-1 infection were administered either *E faecium* SF68 or a placebo daily for 20 weeks. During this period they were group and individually housed and neutered to assess the response to commonly encountered stressors. Cats were monitored for clinical signs of disease, FHV-1 shedding and FHV-1 specific humoral and cell-mediated immune responses and faecal microbiome stability.

Results: Administration of *E faecium* SF68 lessened morbidity associated with chronic FHV-1 infection in some cats and also helped maintain faecal microbial diversity (which declined in cats fed placebo – probably due to mild stress caused by neutering and housing relocation).

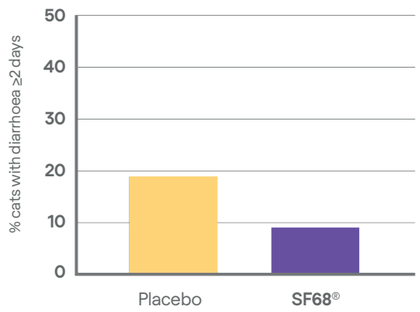
Conclusion: *E faecium* SF68 probiotic may be beneficial in the management of cats with chronic FHV-1 infection.

Effect of the probiotic *Enterococcus faecium SF68* on presence of diarrhoea in cats and dogs housed in an animal shelter. *(Bybee SN et al. 2011)*[4]

Method: 217 cats and 182 dogs in an animal shelter split into two groups. For 4 weeks, one group was fed *E faecium* SF68 and the other group was given placebo. After a one week washout, the groups were switched. Faeces from every individual were scored daily.

Results: The percentage of cats with ≥ 2days diarrhoea in the *E faecium* SF68 group was significantly lower than the control groups. Statistical differences between the groups of dogs were not detected, but diarrhoea was uncommon in both groups of dogs.

Conclusion: Results suggest *E faecium* SF68 may have a beneficial effect on the GI tract of cats with non-specific diarrhoea.



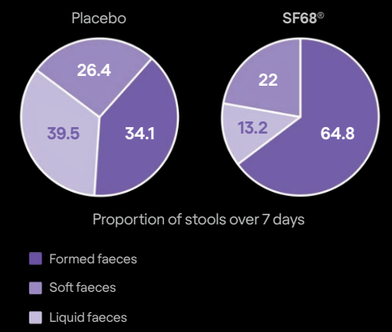
1. Benyacoub J, Czarnecki- Maulden G, Cavadini C, *et al.* 2003. Supplementation of food with *Enterococcus faecium* (SF68®) stimulates immune functions in young dogs. *J Nutr.* **133 (4)**. 1158- 1162.
2. Veir JK, Knorr R, Cavadini C, *et al.* 2007. Effect of supplementation with *Enterococcus faecium* (SF68®) on immune functions in cats. *Vet Therap.* **8:** 4, 229- 238
3. Lappin M, Veir JK, Satyaraj E, *et al.* 2008. Pilot study to evaluate the effect of oral supplementation of *Enterococcus faecium* SF68® on cats with latent feline herpesvirus 1. *JFMS.* **11(8)**, 650-654
4. Bybee SN, Scorza AV, Lappin MR. 2011. Effect of the probiotic *Enterococcus faecium* SF68 on presence of diarrhoea in cats and dogs housed in an animal shelter. *J Vet Intern Med.* **25**:856–8602.
5. Gore AM, Reynolds A. 2012. Effects of *Enterococcus faecium* on stress diarrhoea. ACVIM Forum Proceedings. p 453.
6. Waldron M, Kerr W, Czarnecki-Maulden G, *et al.* 2012. Supplementation with *Enterococcus faecium* reduces flatulence in dogs. 16th Eur Soc Vet Comp Nut (ESVCN) Congress. September.
7. Fenimore A, Martin L, Lappin MR. 2017. Evaluation of metronidazole with and without *Enterococcus faecium* SF68 in shelter dogs with diarrhoea. *Topics in Compan An Med.* **(32)**100–103
8. Torres-Henderson C, Summers S, Suchodolski J, *et al.* 2017. Effect of *Enterococcus faecium* strain SF68 on gastrointestinal signs and fecal microbiome in cats administered amoxicillin-clavulanate. *Top Companion Anim Med.* **32**:104-108.

Effects of *Enterococcus faecium* on stress diarrhoea. *(Gore AM and Reynolds A. 2012)*[5]

Method: Working Alaskan sled dogs (for whom stress diarrhoea is common) were either given *E faecium* SF68 or placebo for 7 days upon the occurrence of diarrhoea. Faeces quality was scored.

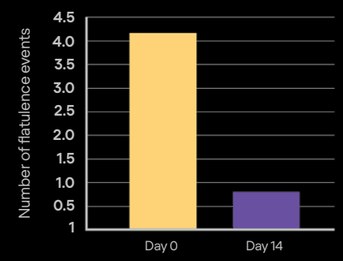
Results: Diarrhoea improved more quickly in dogs given *E faecium* SF68 vs control and dogs given *E faecium* SF68 had less diarrhoea from day 3 onwards than the control group. Dogs given *E faecium* SF68 also had significantly fewer days with diarrhoea – improving on average 2 days sooner than the placebo group. By day 4, 92% of the SF68 group had normal stools with 100% resolution by day 5, whereas the placebo dogs had slower resolution of clinical signs and none reached full resolution within 7 days.

Conclusion: *E faecium* SF68 probiotic may be beneficial in the management of stress-related diarrhoea in dogs.



Supplementation with *Enterococcus faecium* reduces flatulence in dogs. *(Waldron W et al. 2012)*[6]

- Supplementation with *E faecium* SF68 for 2 weeks resulted in both a reduction in the total number of flatulence events and the maximum amount of hydrogen sulphide released.

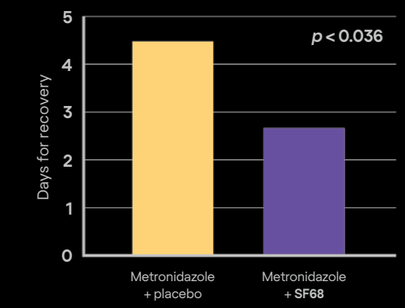


Evaluation of metronidazole with and without *Enterococcus faecium SF68* in shelter dogs with diarrhoea. *(Fenimore A et al. 2017)*[7]

Method: Shelter dogs with non-specific diarrhoea were split into two groups. All dogs were given metronidazole but one group were given *E faecium* SF68 and the other were given a placebo. Treatment was continued for 7 days and faeces were scored.

Results: More of the *E faecium* SF68 group had faecal scores <3 by day 7 (50% vs 29.4% of placebo group). Speed of improvement was quicker for *E faecium* SF68 group (mean 2.8 days versus mean 4.4 days for placebo group). The percentage of days with normal stools was significantly higher for dogs administered metronidazole + SF68 (65.6%) vs metronidazole alone (46.9%).

Conclusion: Supplementation with *E faecium* SF68 probiotic may help speed recovery in dogs with nonspecific diarrhoea.

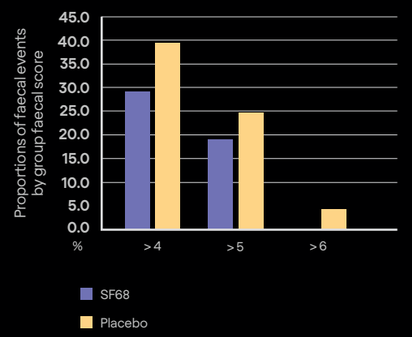


Effect of *Enterococcus faecium* strain SF68 on gastrointestinal signs and fecal microbiome in cats administered amoxicillin-clavulanate. *(Torres-Henderson C, et al. 2017)*[8]

Method: Double-blinded, placebo-controlled study. 34 adult cats were separated into two groups and appetite, attitude, hydration, vomiting, and faecal score monitored. All cats given amoxicillin-clavulanate twice daily for 7 days. Two hours before the antibiotic, *E faecium* SF68 or a placebo was given. SF68 administration and faecal scoring continued for 5 days after stopping the antibiotic.

Results: Faecal scores > 5 (on the 7 point scale) were detected in 69.2% of the SF68 group vs 85.7% of the placebo group. Faecal scores of 7 were only detected in the placebo group. Cats in the SF68 group had significantly lower total faecal scores vs cats in the placebo group.

Conclusion: Feeding *E faecium* SF68 can lessen some adverse side effects seen when giving amoxicillin-clavulanate.



PURINA®

PRO PLAN®

FortiFlora®



Please contact your PURINA® representative or contact vettechline@purina.nestle.com for more information

® Reg. Trademark of Société des Produits Nestlé S.A