



## Benefits of Feline EN St/Ox and FortiFlora® in the successful management of acute diarrhoea due to antibiotics administration



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Antibiotic treatments can have side effects such as imbalance of the microbial gut flora (intestinal microbiota) due to the specific destruction of certain beneficial strains of intestinal flora. This can result in diarrhoea. Certain strains of probiotics, specially selected for their safety, effectiveness and resistance to the digestive enzymes of the target species, can influence the microbial flora *in situ*. They do so either by altering the physico-chemical conditions (pH altered by lactic acid production, and mucus) and the composition of the microbial flora itself (by competing with pathogens and supporting certain strains of *Lactobacillus*), or by interacting with the mucosal cells and local immune system<sup>1</sup>. The case of Haribo illustrates the nutritional interventions to consider in the event of imbalance of the gut flora (dysbiosis, dysmicrobism) in kittens.

### Case History

Haribo, a two and a half month old male Maine Coon kitten, was brought in to the Nantes National College of Veterinary Medicine (Oniris) with severe dyspnoea for an emergency consultation. Following radiological and ultrasound examination and collection of a sample by thoracocentesis, a bilateral pyothorax was diagnosed. Treatment comprised the insertion of a thoracic drain and the initiation of broad-spectrum antibiotic therapy once the bacterium responsible had been identified (a combination of amoxicillin/clavulanic acid + metronidazole). Fifteen days after the start of antibiotic therapy, the kitten showed an acute diarrhoea scoring 6 on a 7-point scale (photo 2) (where 1 indicates a well-formed, hard stool, and 7 indicates profuse diarrhoea). It was then brought in for a nutritional consultation.

### Clinical examination

The kitten weighed 1.9 kg with a body condition index of 5 on a 9-point scale (ideal). Bloating was detectable on abdominal palpation, with the kitten showing signs of abdominal discomfort.



### Treatment

An easily digestible gastrointestinal diet suitable for growing kittens (Feline EN St/Ox from Nestlé PURINA) was prescribed *ad lib.*, together with a probiotic supplement (FortiFlora® from Nestlé PURINA). Feline EN St/Ox is rich in protein (40% of the product), high in energy (3.9 kcal ME/g feed) and is adapted to the nutritional needs of both adult cats and kittens. Five days after the change of food, the signs of abdominal bloating in the kitten had disappeared. Three weeks later, at the first check-up, the faecal score had improved substantially (with stools scoring 4/7, i.e. well-formed but still fairly moist). The kitten's growth was good (it weighed 2.8 kg at consultation). Antibiotic treatment was continued following encouraging radiograph results. Finally, at the next check-up six weeks later, the faecal score was 3/7 (stools well-formed but not very firm), the animal weighed 4 kg and still had a good body condition index (5/9, ideal). Because the radiograph results had been judged satisfactory, the antibiotic therapy and administration of probiotics were stopped but prescribing of the easily digestible diet continued. Two weeks later, the kitten still had an optimal faecal score (2.5/7) (photo 3) with no signs



Photo 2: Stool Scoring 6/7



Photo 3: Stool Scoring 2.5/7

of recurrence. A transition back to its usual food (PRO PLAN® Junior) was then successfully completed. No recurrence was observed at the final check-up a month later.

### Discussion

Kittens are particularly vulnerable to disruptions of the gut flora, as is demonstrated by the high incidence of diarrhoea in this population<sup>2</sup>. A number of studies, including a meta-analysis involving the use of probiotics to prevent diarrhoea in children receiving antibiotic treatment, have demonstrated the beneficial effect of probiotics for this indication<sup>3,4</sup>. In veterinary medicine, a study of 31 kittens fed with or without probiotic supplements (FortiFlora® from Nestlé PURINA) showed a significant reduction in the incidence and duration of spontaneous episodes of diarrhoea in the group receiving supplements<sup>5</sup>. Finally, any dietary prescription for a kitten should respect the nutritional requirements for growth.

### Conclusion

The understanding and management of gastrointestinal disorders in domestic carnivores receiving antibiotic therapy is an act of preventive medicine in its own right. Preserving the homeostasis of the intestinal flora throughout the animal's growth is essential for its health. In this way, the administration of an effective probiotic can therefore help not only to treat iatrogenic diarrhoea but also to prevent it, provided the probiotic is given at least 3 hours before or after the antibiotic is taken.

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### Further Reading

- 1 Wynn S.G., Probiotics in veterinary practice, *Journal of the American Veterinary Medical Association*, 2009, **234**, 5, 606-613
- 2 Jia J., Frantz N., Khoo C., *et al.* Investigation of the faecal microbiota of kittens: monitoring bacterial succession and effect of diet, *FEMS Microbiology Ecology*, 2011, **78**, 2, 395-404
- 3 Johnston B.C., Goldenberg J.Z., Vandvik P.O., *et al.* Probiotics for the prevention of pediatric antibiotic-associated diarrhea, *Cochrane Database of Systematic Review*, 2011. 11. Art. No.: CD004827. DOI: 10.1002/14651858.CD004827.pub3.
- 4 Hickson M, DiSouza A.L., Muthu N., *et al.* Use of probiotic Lactobacillus preparation to prevent diarrhoea associated with antibiotics†: randomised double blind placebo controlled trial, *BMJ*, 2007, **14**, 335
- 5 Czarnecki-Malden G.L., Cavadini D.F., Lawler J. *et al.* Incidence of naturally occurring diarrhea in kittens fed *Enterococcus faecium* SF 68, *Compendium Continuing Education for the Practicing Veterinarian*, 2007, **29**, 37