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## Efficacy of Secnidazole in the Treatment of Giardiasis in a Cat

### *Giardiazisli Bir Kedide Secnidazolün Etkinliği*

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**Abstract:** A 6 month old, 2 kg, female cat was referred to the Veterinary Medical Teaching Hospital of the Faculty of Veterinary Medicine, University of Mehmet Akif Ersoy in Burdur province with bloody diarrhea and dehydration. The cat had a history of more than 1 week of disease. Faecal sample was taken for parasitological examinations and analyzed by zinc sulfate (%33 ZnSO<sub>4</sub>) centrifugal flotation and native techniques. *Giardia duodenalis* (*G. lamblia*) cysts and trophozoites were detected from cat faeces. Motile trophozoites were seen with native technique. Additionally, trophozoites were stained with Giemsa solution. The cat received a single oral dose of 30 mg/kg secnidazole diluted in 1 ml water. For the evaluation of drug efficacy, faeces were re-examined at day 7 after treatment.

The aim of this study is to examine parasitological findings of simultaneous infection by *G. duodenalis* in cat, and treatment of the disease by a single dose of secnidazole. It is also the first case report about secnidazole treatment in cats with giardiasis in Turkey.

**Key words:** Cat, *Giardia lamblia*, treatment, secnidazole.

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**Öz:** Burdur Mehmet Akif Ersoy Üniversitesi Veteriner Fakültesi Hastanesi'ne 6 aylık, 2 kilogram ağırlığında dişi bir kedi kanlı ishal ve dehidrasyon şikayetiyle getirildi. Kedinin hastalığı 1 haftadan uzun geçmişe sahipti. Parazitolojik muayeneler için dışkı örnekleri alındı ve analizde çinko sülfat (%33 ZnSO<sub>4</sub>) santrifüjlü flotasyon ve natif muayene kullanıldı. Kedinin dışkısında *Giardia duodenalis* (*G. lamblia*) kistleri ve trofozoitleri tespit edildi. Trofozoitler natif teknikte görüntüldü. Ek olarak, trofozoitler Giemsa solüsyonuyla boyandı. Kediye tek doz 30 mg/kg secnidazole 1 ml suda eritilerek oral olarak verildi. İlaç etkinliğinin değerlendirilmesi için dışkı tedaviden 1 hafta sonra tekrar muayene edildi.

Çalışmanın amacı, kedide simültane gerçekleşen *G. duodenalis* enfeksiyonunun parazitolojik bulgularını değerlendirmek ve hastalığı tek doz secnidazole uygulamasıyla tedavi etmektir. Bu vaka giardiazisli kedilerde secnidazolün etkinliği konusunda Türkiye'de yayınlanan ilk rapordur.

**Anahtar sözcükler:** Kedi, *Giardia lamblia*, tedavi, secnidazole.

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## **Introduction**

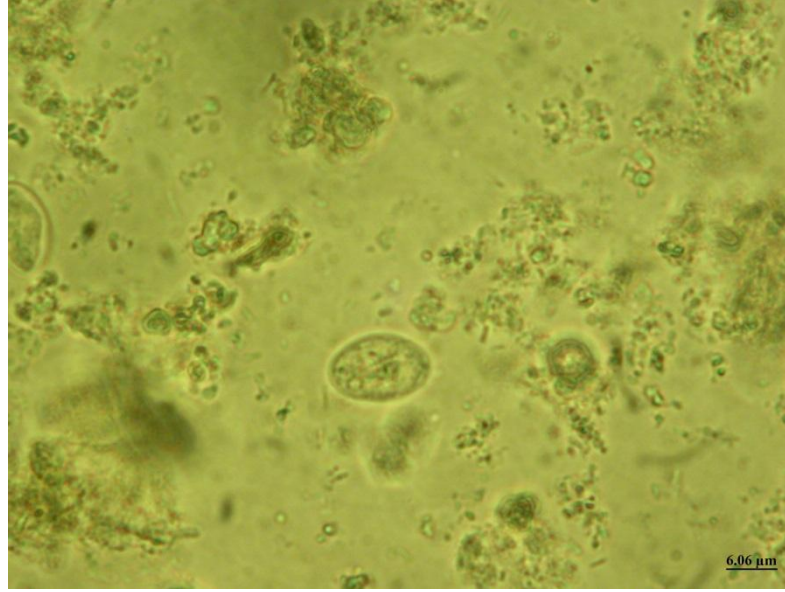
*Giardia* species, especially *G. duodenalis* (*G.lamblia*, *G.intestinalis*) can affect both dogs and cats. The prevalence of infection in canine studies ranges from less than 2% to 100% in kennels. Cats are less commonly infected than dogs (Hall and German, 2005). Prevalence in cats commonly range between 1% and 10% (Kirkpatrick, 1985; Barr, 2006), but some high prevalence rates like 50% have been reported in some catteries and animal shelters (Kirkpatrick, 1985).

The parasite is usually transmitted via the fecal-oral route. The parasite primarily infects the small intestine of dogs and cats. The cecum and colon are only occasionally colonized by *Giardia* (Washabau and Holt, 2005). Ingested oocysts excyst in the upper small intestines, and trophozoites attach to the intestinal mucosa from the duodenum to the ileum. After multiplication of trophozoites, oocysts are passed in the faeces at 1 to 2 weeks after infection. Molecular epidemiologic studies indicate that giardiasis may be a zoonosis (Hall and German, 2005). The most common signs in cat are acute or chronic diarrhea, weight loss, acute or chronic vomiting may develop (Washabau and Holt, 2005; Janeczko and Griffin, 2010). Metronidazole and fenbendazole have been used in the treatment of feline and canine giardiasis (Stokol et al., 1997; Scorza and Lappin, 2004). But, drug resistance against giardiasis, especially to metronidazole and albendazole, has been reported elsewhere (Balteiro, 2006).

## **Case**

A 6 month-old, 2-kg, female cat was referred to the Veterinary Medical Teaching Hospital of the Faculty of Veterinary Medicine, University of Mehmet Akif Ersoy in Burdur province with bloody diarrhea and dehydration. The cat had a history of more than 1 week of disease. Faecal sample was taken from the cat for parasitological examinations.

The faecal sample was analyzed with zinc sulfate (%33 ZnSO<sub>4</sub>) centrifugal flotation and native examination techniques. *Giardia duodenalis* (*G. lamblia*) cysts and trophozoites were detected (Figure 1). Motile trophozoites were seen with native techniques. Additionally these *Giardia* trophozoites were stained with Giemsa solution (Zajac and Conboy, 2006; MAFF, 1986). Cysts of *Giardia intestinalis* were measured between 9.09-13.13 X 7.07-9.09 µm. Measurement of 10 cysts gave 11.6 X 8.3 µm mean size.



**Figure 1.** Cyst of *Giardia duodenalis*  
**Resim 1.** *Giardia duodenalis* kisti

The cat received a single oral dose (1 mL) of 30 mg/kg secnidazole diluted in water. For the evaluation of drug efficacy, faeces were re-examined at day 7 after treatment.

No adverse reactions were observed either during or after the treatment. Treatment efficacy was measured by the reduction in cyst excretion. *Giardia* spp. cysts were not observed in the faeces of the cat by microscopic examination after faecal flotation at day 7 after treatment. Episodes of diarrhea were not more observed at the seventh day of treatment. Therefore, the therapeutic protocol obtained 100% of effectiveness.

### **Discussion**

*Giardia lamblia* is a flagellate parasite that can cause significant gastrointestinal disease in a wide variety of mammals including kittens and humans (Monis and Thompson, 2003). It is postulated that animals may be a reservoir for human infection and vice versa, thus, giardiasis can be classified as a zoonothroponotic disease (Zarebavani et al., 2006). Clinical signs range from mild, self-limiting, acute diarrhea to severe or chronic small bowel diarrhea associated with intestinal protein loss and weight loss. Metronidazole is the most commonly used drug to treat *Giardia* infection in pet animals. The standard dosage for cats is 10 to 25 mg/kg given orally two times a day for 5 days. However, gastrointestinal and central nervous system toxicity has been associated with the administration of metronidazole and bone marrow toxicosis has been associated with albendazole in kitten (Caylor and Cassimatis, 2001; Stokol et al., 1997).

Secnidazole is a commercialized drug for the treatment of giardiasis in humans. It has the advantage to be administered in a single dose with sound curative effects (Di Prisco et al., 2000). Da Silva et al. (2011) have reported that curative efficacy of secnidazole in cats infected by *G. duodenalis* was 100%. In this case no cyst was seen in the faeces after treatment by single dose of secnidazole on day 7. As a conclusion, a single oral dose of secnidazole (30 mg/kg) can be effective in treatment of *giardiasis* in naturally infected cats. This is the first case report about secnidazole treatment in cats with giardiasis in Turkey.

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