



## Fecal Ciliate Composition of Domestic Horses (*Equus caballus* Linnaeus, 1758) Living in Kyrgyzstan

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### Abstract

Species composition and distribution of intestinal ciliates were investigated in the feces from 15 domestic horses living in Bishkek, Kyrgyzstan. Twenty-three species belonging to 14 genera were identified. This is the first study on intestinal ciliates in domestic horses living in Kyrgyzstan. The mean number of ciliates was  $14.1 \pm 6.8 \times 10^4$  cells ml<sup>-1</sup> of feces and the mean number of ciliate species per host was  $6.0 \pm 3.2$ . No endemic or new species were detected. *Blepharocorys* was the major genus as these ciliates were detected in high proportions. In contrast *Holophryoides*, *Allantosoma* were only observed at low frequencies. Recorded ciliate species in this investigation had almost the same characteristics as those described in previous studies. There was no important geographic variation in the intestinal ciliate fauna of equids.

**Key words:** Intestinal ciliate, feces, horse, Kyrgyzstan

### Introduction

The horse intestine is inhabited by a unique ciliate fauna which helps in the digestion of cellulose and starch (Dehority 1986). These ciliates occur in two major taxa, Vestibuliferida and Entodiniomorpha (Lynn 2008; Moon-van der Staay *et al.* 2014). Horses are preferentially infected as young foals by coprophagy (Ike *et al.* 1985; Egan *et al.* 2010). It is now well known that many ciliate species are excreted alive in the feces of equids (Ike *et al.* 1981; Ike *et al.* 1983a, b; Tung 1992; Ito *et al.* 1996; Imai *et al.* 1999; Güreli & Göçmen 2010, 2011, 2012). The intestinal ciliate fauna of horses was first reported by Gruby and Delafond (1843). Since that time, many studies have been done (Gassovsky 1919; Hsiung 1930; Strelkow 1939; Ozeki 1977; Kornilova 2003; Göçmen *et al.* 2012; Güreli 2012).

Although the composition of the intestinal ciliate community of various equids is known in general, no investigations have been conducted on the ciliate fauna of domestic horses living in Bishkek, Kyrgyzstan.

The aim of this study was to identify and quantify the fecal ciliate fauna from those animals living in Bishkek, Kyrgyzstan and compare the data with previous investigations on equids from various other locations.

### Material and methods

Fecal samples were collected from 15 domestic horses *Equus caballus* Linnaeus, 1758 living in the vicinity of Bishkek, Kyrgyzstan. The samples were obtained from March to May 2014, in the spring of year. The horses were 4 years old and the altitude of the horses lived was 1000-1500 m. The predominant vegetation of this altitude was mountain steppe. The mountain steppe was composed of meadows and mixed-grass steppes were characterized by sod grasses, forb species, and steppe shrubs. The fecal samples were collected immediately after defecation and fixed and stained in about 2 times as much methylgreen formalin saline solution (MFS) as their original volume