

## **P-4. Comparative Study of Bacterial Populations in the Feces of Pasture-kept and Stabled Horses and Ponies**

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Social interactions and access to natural environments can affect the composition of animal intestinal microbiota, which plays important roles in host nutrition and immunity. Previous studies have shown that turnout and stabling may affect the behavior of horses, while it is not known how they can affect microbial composition in the intestinal microbiota. In this study, we collected fecal samples from horses and ponies kept in different environments (stabled or un-stabled, group or single turnout, pasture or paddock turnout) and compared the bacterial community structure by 16S rRNA gene next-generation sequencing. While the phylum-level bacterial composition was similar between the fecal samples, significant variations were observed at the genus-level composition. The genus *Carnobacterium*, which is commonly found in dairy and meat products, was more common in stabled horses than the pasture-turnout group. The pasture-turnout horses possessed unique bacterial groups that been found in gravity zebra's feces, which suggests that the 24h pasture-turnout may have shifted the gut microbiota composition to more "wild" composition. Besides, *Bacillus*-related bacterial groups were also common in turnout horses, which may reflect the close contact to the soil. Interestingly, horses from the same farm or facility shared similar microbiota regardless of single or group-turnout, which implies inter-host dispersal is not restricted to the group-turnout. Our findings suggest that turnout and stabling as well as inter-host dispersal are important factors shaping bacterial composition of horse intestinal microbiota.