

No treatment is the best treatment -- diarrhea in young foals

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Horse-breeders are used to the fact that most new-born foals suffer from diarrhoea. Many methods have been suggested to avoid the problem, including supplementing the mothers' diets with β -carotene, which is known to be helpful in preventing diarrhoea in young calves. However, Juliane Kuhl in the group of Christine Aurich at the University of Veterinary Medicine, Vienna has now shown that this food supplement has no real effect on the incidence of diarrhoea in foals.

Kuhl, Aurich and their collaborators were interested in learning what causes the condition and how it can be treated. They thus examined the [bacteria](#) in the faeces of foals and their mothers, as well as the measuring the levels of antibodies (γ -globulins) in the animals' blood. Foals are born with very low concentrations of antibodies, i.e. without functional immune systems. However, γ -globulins are transferred to the foal with the mothers' milk for a few hours after birth. As foals can synthesize the antibodies in sufficient amounts only after they are about four weeks of age, adequate milk intake immediately after birth is essential – which argues strongly against the practice of limiting the time foals are allowed to suckle their mothers, another method that has been proposed to help prevent [diarrhoea](#). If foals take up sufficient amounts of their mothers' first milk (colostrum), there is no period in the horses' early development where the levels of γ -globulins are dramatically reduced. And as Kuhl was able to show that foals with low γ -globulin levels did not develop diarrhoea more often than those with much higher levels, the incidence of diarrhoea cannot be related to a weakened immune system.

The bacteria in the faeces give a good indication of the animals' intestinal flora, which is difficult to monitor directly. The scientists found little change over time in the nature of bacteria in the mothers' faeces, although they did observe dramatic differences in the bacteria in the foals' faeces. Foals are born with very low amounts of bacteria in their intestines but are colonized by *E. coli* within the first day of their lives. In contrast, the number of foals with *Enterococcus* remains low until about ten days following birth, after which these bacteria can be detected in the majority of animals. Other bacteria such as *Streptococcus* and *Staphylococcus* arrive even later, between two and four weeks after birth, by which time the foals' intestinal flora is essentially indistinguishable from that of their mothers.

Interestingly, the researchers found that the changes in the bacterial flora closely parallel the development of diarrhoea. Kuhl is careful to note that "we have not yet shown that diarrhoea results directly from the switch in intestinal bacteria, although our data make it seem very likely that this is the case."

The implications of the conclusion are that the horse is essentially predisposed to develop diarrhoea at a very young age. The horse is thus the only domestic animal where most young animals suffer from non-infectious diarrhoea. As the condition clears up fairly quickly without the need for antibiotic treatment, food withdrawal or food supplements such as β -carotene, breeders should simply accept that many of their animals will suffer from the condition. Kuhl is happy to concede that "our result might not be exactly what horse-breeders or the feed industry hoped to hear. Not all foals develop diarrhoea but the vast majority of them do – and do not suffer any long-term consequences from it."

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