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## 奶牛瘤胃亚急性酸中毒的产生原因和营养学控制方法

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## Causes and Nutritional Control Methods of Subacute Rumen Acidosis in Dairy Cows

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**摘要** 瘤胃亚急性酸中毒是目前困扰奶牛生产的一大难题。高精、低粗的饲料结构会引起瘤胃微生物区系结构改变,挥发性脂肪酸浓度升高,瘤胃液pH下降,从而引起瘤胃亚急性酸中毒。奶牛发生瘤胃亚急性酸中毒时瘤胃液细菌内毒素浓度升高。高浓度的内毒素转运至血液引发急性期反应,血浆中矿物质和代谢物水平发生改变,从而使奶牛生产性能下降。本文对高精饲料下瘤胃中内毒素的产生和转运以及内毒素引发的急性期反应进行综述,同时,根据近年来的研究进展重点介绍一些减少内毒素产生和转运的新方法,旨在为更好地控制或减少瘤胃亚急性酸中毒时内毒素对奶牛的危害提供参考。

**关键词:** 瘤胃 亚急性酸中毒 脂多糖 奶牛

**Abstract:** Subacute rumen acidosis (SARA) as a serious problem frequently occurs in the production of dairy cows, and is mainly caused by the diet structure of high proportion of concentrate and low proportion of roughage. The structure results in a change of rumen microbial colonies and an increase in volatile fatty acid (VFA) concentrations but a decrease in rumen fluid pH. When SARA occurs, bacterial endotoxin concentration increases. Endotoxin can be transported into bloodstream, as a result, the acute phase response is activated, and levels of plasma minerals and metabolites change, finally, an adverse effect on performance of dairy cows is caused. In this paper, the generation and transportation of endotoxin as well as the endotoxin-induced acute phase response under a high concentrate diet feeding condition are reviewed, meanwhile, based on studies in recent years, some new methods for reducing yield and transportation of endotoxin are introduced, which may provide references for controlling harmful effects of endotoxin in dairy cows suffered SARA.

**Keywords:** rumen, subacute rumen acidosis, lipopolysaccharide, dairy cow

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