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藏嵩草绿汁发酵液提高苜蓿青贮发酵品质

Improve fermentation quality of alfalfa silage by addition of fermented juice prepared from Kobresia littledalei

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中文摘要:

为探讨不同海拔藏嵩草绿汁发酵液（previous fermented juice, PFJ）对青贮饲料发酵品质和营养价值的影响，以苜蓿为青贮原料，分别添加4种不同海拔的藏嵩草 PF
加等量蒸馏水为对照制作苜蓿青贮，每个处理4次重复，青贮60 d后分别测定其发酵品质和营养成分。结果表明，藏嵩草附着及PFJ中乳酸菌数随着海拔升高显著增加（
5）；与对照组相比，添加4种PFJ均能显著降低袋装苜蓿青贮的pH值、乙酸和丁酸含量（P<0.05），并且随着海拔升高呈降低趋势；添加4种PFJ均显著增加了苜蓿青贮
物质（dry matter，DM）和可溶性糖（water soluble carbohydrate，WSC）含量（P<0.05），海拔越高，藏嵩草绿汁发酵液对苜蓿青贮过程中蛋白降解的抑制作用越强，
饲料中非蛋白氮（non-protein nitrogen，NPN）的含量越低（P<0.05）。综合试验结果,添加藏嵩草绿汁发酵液可以明显改善苜蓿青贮的发酵品质，抑制青贮过程中蛋白
解，且藏嵩草生长的海拔越高其绿汁发酵液制作的苜蓿青贮饲料品质越好。该研究结果为进一步开发利用高寒地区牧草附着乳酸菌种质资源及研制开发青贮饲料乳酸菌
剂提供了参考。

英文摘要:

Utilization of local grass in cold area and adherent lactobacillus germplasm resources to make Previously Fermented Juice (PFJ) has important significance to modulate high qu
silage and solve seasonal feed-animal imbalance in the Tibetan region. In this study, we collected Kobresia littledalei from different altitudes (four areas) in the Tibetan region: (1)
5100m, Namtso; (2), 4682m, Gulu; (3), 4280m Dangxiong; (4), 3 980 m, Deqing. Kobresia littledalei was used as raw material to make PFJ; the PFJ was then added to production and
equivalent distilled water as a control group to make alfalfa silages. Each processing repeated four times. The storage period was sixty days, and the fermentation quality and nutri
were determined after storage. Measurement indicators included count of lactic acid bacteria living cells in Kobresia littledalei at different altitudes, PFJ fermentation quality indica
(pH, Lactic acid, Soluble carbohydrate, Ammonium nitrogen, etc), fermentation quality and nutrition quality indicator of alfalfa silage added PFJ (pH, lactic acid, acetic acid, butyri
acid, dry matter, crude protein, soluble carbohydrate, etc.) and level of protein decomposition of alfalfa silage added PFJ . Objective was to discuss the effect of previously fermen
juice with different altitudes on fermentation quality and nutritional value of alfalfa silages. The results showed that count of lactic acid bacteria living cells in Kobresia littledalei a
PFJ growing at different altitudes significantly increased as altitude increased (P < 0.05); the maximum count of lactic acid bacteria living cells in Kobresia littledalei was 1.57×109(
and the maximum count of lactic acid bacteria living cells in PFJ was 12.60×109(Ⅰ). The influence of altitude on pH, lactic acid, soluble carbohydrate, and ammonia nitrogen of PF
was significant (P < 0.05). The pH of higher altitude PFJ was lower. The pH of group Ⅰ was minimum (3.63). Compared with the control group, adding PFJ can significantly reduce t
pH value, acetic acid, and butyric acid contents of alfalfa silage (P< 0.05). The minimum pH value was 4.80 (Ⅰ) and the control group pH was 5.92. The alfalfa silage of lactic acid
content increased with the PFJ; altitude significantly increased (P < 0.05), 508% in area (1), 394% in area (2), 409% in area (3), and 191% in area (4) and compared with control grou
respectively. The maximum value of lactic acid was 9.73% (Ⅰ); the minimum control group was 1.60%. Compared with the control, soluble carbohydrate and dry matter contents o
alfalfa silage added four PFJ were significantly increased (P< 0.05), and they increased as altitude increased. PFJ in higher altitude Kobresia littledalei had stronger inhibition on pr
decomposition in the process of silage of alfalfa; as a result, non-protein nitrogen (NPN) content of silage was lower (P < 0.05). Compared with the control, the true protein conten
added group was significantly increased, and the non-protein nitrogen content and ammonia nitrogen content were significantly decreased. The most obvious decrease was pepti
content (P < 0.05), while the free amino acids had a small increase(P < 0.05). The lowest NPN content was 54.28% in group Ⅰ.In conclusion, adding Kobresia littledalei PFJ can imp
alfalfa silage fermentation quality, inhibit protein degradation; the higher the altitude, the better the quality. It had an important role not only in improving the utilization of alfalfa s
protein, but also in providing reference for using local native grass resources for forage grass silage in cold area in future.

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