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三维模式下培养时间对奶牛乳腺上皮细胞酪蛋白基因表达的影响

王秀美¹, 侯先志¹, 敖长金¹, 高民², 考桂兰¹, 高爱武³, 兰儒冰¹, 塔娜¹

1. 内蒙古农业大学动物科学与医学学院, 呼和浩特 010018;

2. 内蒙古农牧业科学院, 呼和浩特 010010;

3. 内蒙古农业大学食品科学与工程学院, 呼和浩特 010018

Effects of Incubation Time on Casein Gene Expressions in Bovine Mammary Epithelial Cells in Three-Dimensional Culture

WANG Xiumei¹, HOU Xianzhi¹, AO Changjin¹, GAO Min², KAO Guilan¹, GAO Aiwu³, LAN Rubing¹, TA Na¹

1. College of Animal Science and Medicine, Inner Mongolia Agricultural University, Hohhot 010018, China;

2. Inner Mongolia Academy of Agriculture and Animal Husbandry, Hohhot 010010, China;

3. College of Food Science and Engineering, Inner Mongolia Agricultural University, Hohhot 010018, China

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摘要 本试验旨在研究三维模式下培养时间对奶牛乳腺上皮细胞(BMECs)酪蛋白基因表达的影响。采用3头健康的3~5岁泌乳黑白花奶牛的乳腺组织,将BMECs经1代纯化后进行三维培养,在三维模式下分别培养3、5、7、9 d,测定BMECs中 α s1-酪蛋白、 β -酪蛋白、 κ -酪蛋白的基因表达量。结果表明,利用三维模式培养5 d的BMECs α s1-酪蛋白和 κ -酪蛋白基因表达量极显著高于培养3、7、9 d($P<0.01$);利用三维模式培养5 d的BMECs β -酪蛋白的基因表达量极显著高于培养3、7 d($P<0.01$),高于培养9 d,但差异不显著($P>0.05$)。结果显示,三维模式下培养时间影响BMECs中 α s1-酪蛋白、 β -酪蛋白、 κ -酪蛋白的基因表达量,本试验条件下最佳培养时间为5 d。

关键词: 奶牛乳腺上皮细胞 三维培养 酪蛋白 基因表达 培养时间

Abstract: This study was conducted to investigate the effects of incubation time on casein gene expressions in bovine mammary epithelial cells (BMECs) in three-dimensional culture. Mammary parenchymal tissue was obtained from three healthy Holstein dairy cows aged from 3 to 5 years. The first generation of BMECs was purified and cultured in three-dimensional culture for 3, 5, 7 and 9 days, respectively. The expression levels of α s1-casein, β -casein and κ -casein genes in BMECs in three-dimensional culture were detected. The results showed that the expression levels of α s1-casein and κ -casein genes in BMECs in three-dimensional culture for 5 days were significantly higher than those for 3, 7 and 9 days ($P<0.01$). The expression level of β -casein gene in BMECs in three-dimensional culture for 5 days was higher than that for 3 ($P<0.01$), 7 ($P<0.01$) and 9 days ($P>0.05$). The results indicate that the expression levels of α s1-casein, β -casein and κ -casein genes in BMECs are affected by incubation time in three-dimensional culture, and the optimal culture time is 5 days.

Keywords: bovine mammary epithelial cells, three-dimensional culture, casein, gene expression, incubation time

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通讯作者 侯先志,教授,博士生导师,E-mail: houxz05@sina.com.cn

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