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研究报告

绵羊皮肤中*GHR*、*IGF-1*和*IGF-1R*基因表达的发育性变化及品种特点

贾 斌[1], 席继峰[1], 张苏云[1], 赵宗胜[1], 赵茹茜[2], 陈 杰[2]

1. 石河子大学动物科技学院, 石河子 832003; 2. 南京农业大学农业部动物生理生化重点开放实验室, 南京 210095

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摘要

采用相对定量反转录多聚酶链式反应 (RT-PCR)方法, 以18S rRNA作内标, 研究了罗米丽(Romilly Hillys)×中国美利奴(新疆军垦型)杂交一代优质细毛羊和哈萨克粗毛羊皮肤中生长激素受体(*GHR*)、胰岛素样生长因子1(*IGF-1*)和胰岛素样生长因子1受体(*IGF-1R*) mRNA发育性变化并进行了品种间比较。分别于30、60、90、135、180和255日龄称重、采毛样, 并于30、90、135和255日龄采皮样。结果表明: 粗毛羊和细毛羊体重、羊毛生长的发育模式没有明显的差异, 30~135日龄体重迅速增加, 135~255日龄增重十分缓慢; 30~135日龄羊毛日增长逐渐增加, 135~180日龄羊毛生长十分缓慢, 而180~255日龄又上升到较高水平。粗毛羊皮肤中*GHR* mRNA在30~90日龄显著增加($P<0.05$), 90日龄达到高峰, 此后显著下降($P<0.05$); 细毛羊在135日龄时*GHR* mRNA极显著地升高($P<0.01$), 此后又极显著地下降。粗毛羊皮肤中*IGF-1*、*IGF-1R* mRNA 30~90日龄上升, 90日龄之后极显著下降($P<0.01$); 细毛羊皮肤中*IGF-1*、*IGF-1R* mRNA出生时较高, 然后逐渐下降。品种之间比较, 细毛羊*GHR* mRNA出现高峰晚于粗毛羊, 135日龄高峰时显著地高于粗毛羊; 粗毛羊*IGF-1*、*IGF-1R* mRNA在90日龄出现高峰, 并极显著或显著地高于细毛羊; 粗毛羊90日龄前*GHR*、*IGF-1*和*IGF-1R* mRNA高于细毛羊, 之后低于细毛羊。结果提示: 绵羊皮肤中*GHR*、*IGF-1*和*IGF-1R*基因表达有特定的发育模式, 并存在品种差异。

关键词 绵羊 皮肤 生长激素受体(GHR) 胰岛素样生长因子1(IGF-1) 胰岛素样生长因子1受体(IGF-1R)

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The Developmental Patterns of *GH-R*, *IGF-1* and *IGF-IR* Gene Expression in Sheep Skin

JIA Bin[1], XI Ji-Feng[1], ZHANG Su-Yun[1], ZHAO Zong-Sheng[1], ZHAO Ru-Qian[2], CHEN Jie[2]

1. College of Animal Science and Technology, XinJiang Shihezi Agricultural University, Shihezi 832003, China; 2. Key Laboratory of Animal Physiology and Biochemistry, Ministry of Agriculture, Nanjing Agricultural University, Nanjing 210095, China

Abstract

<P><SPAN lang=EN-US style="FONT-SIZE: 10pt; FONT-FAMILY: 'Times New Roman'; LETTER-SPACING: 0.1pt; mso-ansi-language: EN-US; mso-fareast-language: ZH-CN; mso-bidi-language: AR-SA; mso-font-kerning: 1.0pt; mso-fareast-font-family: 宋体"><SPAN lang=EN-US style="FONT-SIZE: 10pt; FONT-FAMILY: 'Times New Roman'; LETTER-SPACING: 0.1pt; mso-ansi-language: EN-US; mso-fareast-language: ZH-CN; mso-bidi-language: AR-SA; mso-font-kerning: 1.0pt; mso-fareast-font-family: 宋体"><SPAN lang=EN-US style="FONT-SIZE: 10pt; FONT-FAMILY: 'Times New Roman'; LETTER-SPACING: 0.1pt; mso-ansi-language: EN-US; mso-fareast-language: ZH-CN; mso-bidi-language: AR-SA; mso-font-kerning: 1.0pt; mso-fareast-font-family: 宋体">Semi-quantitative RT-PCR was applied to investigate the developmental patterns of <EM>GH-R</EM>, <EM>IGF-1</EM> and <EM>IGF-IR</EM> mRNA expression in skin of two sheep breeds. One breed was the first filial generation (F₁) of Romilly Hillys×Merino of China (Xinjiang Agricultural Reclamation line) wool sheep, and the other was Kazak hair sheep. 18S rRNA was used as the internal standard. Sheep were weighed and wool and skin samples were collected at different times. Results showed that body weight increased rapidly during 30—135 days but slowed during 135—255 days. Wool growth increased gradually during 30—135 days, degreased till 180 days of age,

but rebounded thereafter. Overall, body weight and developmental patterns of wool growth was not significant different between hair and wool sheep. <EM>GH-R</EM> mRNA expression in the skin of hair sheep increased significantly during 30—90 days, peaked at 90 days of age (<EM>P</EM><0.05), then declined significantly (<EM>P</EM><0.05). <EM>GH-R</EM> mRNA expression in the skin of wool sheep increased significantly until 135 days of age (<EM>P</EM><0.01) and then decreased significantly (P<0.01). The peak level was higher in the wool sheep than the hair sheep. The expression of cantly <EM>IGF-1</EM> mRNA and <EM>IGF-IR</EM> mRNA in the skin of hair sheep increased during 30-90 days, then declined significantly (<EM>P</EM><0.01). The expression of <EM>IGF-1</EM> mRNA and <EM>IGF-IR</EM> mRNA in the skin of wool sheep were high at birth and then reduced gradually. The <EM>IGF-1</EM> mRNA expression in the skin of hair sheep reached its peak at 90 days of age, and was significant higher than that of wool sheep. The expression of <EM>GH-R</EM>, <EM>IGF-1</EM> and <EM>IGF-IR</EM> mRNA in skin of hair sheep was higher than that of wool sheep before 90 days of age, but was lower after that. The results suggest that <EM>GH-R</EM>, <EM>IGF-1</EM> and <EM>IGF-IR</EM> mRNA expression in the skin of sheep follows specific developmental patterns, and different patterns exist between the two breeds.</SPAN></SPAN></SPAN></P>

Key words sheep skin growth hormone receptor (GH-R) insulin like growth factor-1 (IGF-1) insulin like growth factor I receptor (IGF-IR)

DOI:

通讯作者 赵茹茜 lapb@njau.edu.cn