Sex- and age-dependent expression of \textit{Pax7}, \textit{Myf 5}, \textit{MyoG}, and \textit{Myostatin} in yak skeletal muscles

G. Wu\textsuperscript{1*}, J. Zhang\textsuperscript{1*}, L. Wang\textsuperscript{1}, S. Xu\textsuperscript{1}, J. Zhou\textsuperscript{1}, A. Xiang\textsuperscript{2} and C. Yang\textsuperscript{1}

\textsuperscript{1}Stake Key Laboratory of Plateau Ecology and Agriculture, Qinghai Academy of Animal Science and Veterinary Medicine, Qinghai University, Xining, Qinghai, China
\textsuperscript{2}College of Animal Science and Technology, Northwest A & F University, Yangling, Shaanxi, China

*These authors contributed equally to this study.

Corresponding author: J. Zhou
E-mail: mkyzhjp@126.com

Received November 6, 2015
Accepted January 29, 2016
Published June 24, 2016
DOI http://dx.doi.org/10.4238/gmr.15028020

\textbf{ABSTRACT.} The aim of this study was to investigate the myogenic factor mRNA expression pattern of \textit{Pax7}, \textit{Myf5}, \textit{MyoG}, and \textit{Myostatin} mRNA at different ages, sexes, and muscle tissues of Datong yaks. The expression patterns in semimembranosus (SM), quadriceps femoris (QF), and triceps muscle of arm (TM) were detected by quantitative real-time polymerase chain reaction and compared using biostatistics. The results showed that the \textit{Pax7} gene expression levels were higher in the hindquarters (SM and QF) than in the forequarters, and was higher in male compared to in female muscle (P ≤ 0.05). The \textit{Myf5} gene expression levels of male yaks were highest in QF (P ≤ 0.05), whereas the expression levels of female yaks were highest in TM (P ≤ 0.05). Female \textit{MyoG} gene expression levels were higher in QF and TM compared to in male yaks. The \textit{MyoG} expression was higher in all muscles at 6 months old compared to in 3-year-old muscle. The
highest MSTN gene expression was found in 6-month-old TM muscle and in QF muscle of 3 years (P ≥ 0.05). In conclusion, yak muscles showed different growth patterns depending on position. At 6 months of age, the satellite cells in the male hindquarter muscles and the female forequarter muscle showed a strong proliferative ability, at the same time the satellite cells in all female muscles had a powerful differentiation ability. Hindquarter muscles appear to mainly grow at younger ages and forequarters mainly grow at older ages.

**Key words:** Myogenic factor; Sex; Age; Expression pattern