Exercise Biochemistry Review

Proceedings of IBEC 2018, Beijing, China, October 23-25
PO-165

Effects of Living-High Training-Low on HIF-1α Transcriptional Regulatory Factors MAPKs mRNA in Gastrocnemius of Rats

Sen Huang[1], Jianhon Liu[1], Zhihong Zhou[2], Wentao Lin[3], Xiquan Weng[3]
1.Hunan Institute of Sport Science
2.Hunan Sports Professional College
3.Guangzhou Sport University

Objective To evaluate the effects of Living-High Training-Low on HIF-1α transcriptional regulatory factors MAPKs mRNA in gastrocnemius of Rats.
Methods After adaptive training, 40 8-weeks-old male SD rats were divided into living-low quiet control group (LC), living-low training-low group (LoLo), living-high quiet control group (HC), living-high training-low group (HiLo). All living-high groups stayed in the environment with 13.6% oxygen concentration, about altitude of 3500 m, for 12h/day. All training groups underwent treadmill training with 35m/min for 1hour/day, 5days/week. 4 weeks later, the gastrocnemius was sampled 24 hours after the last training. The ERK, p38MAPK, JNK and HIF-1α mRNA genes expressions in gastrocnemius were measured by real-time quantitative PCR.
Results The gastrocnemius ERK mRNA of HiLo group was significantly higher than LC (P<0.01), LoLo and HC groups (P<0.05). The p38MAPK mRNA of HiLo group was significantly higher than LC and LoLo groups (P<0.01 and P<0.05), and there was no significant difference between HiLo and HC group (P>0.05). The JNK and HIF-1α mRNA of HiLo group were significantly higher than other groups (P<0.01).
Conclusions Living-High Training-Low significantly raise ERK、p38MAPK、JNK and HIF-1α gene expression in gastrocnemius of Rats. ERK, p38MAPK and JNK may be one of the transcription factors regulating HIF-1α mRNA expression in Living-High Training-Low in gastrocnemius of Rats.