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Markers of Metabolic Adaptation in Gastrocnemius Muscle after Administration of Antiandrogen in Endurance Trained Rats

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We studied the effect of Flutamide, an androgen receptor (AR) blocker, on glycogen content, the glycogen synthase (GS) and irisin expression in gastrocnemius muscles of rats undergoing endurance training for 8 weeks. Trained animals were found to have a higher glycogen content and stronger expression of GS and irisin than untrained animals. The higher glycogen content in gastrocnemius corresponds to the increased expression of GS in trained rats, which indicates that this enzyme takes part in the adaptation processes. Flutamide treatment increased the serum testosterone levels and decreased glycogen and irisin expressions. Glycogen and irisin in the muscle decreased when training was combined with administration of Flutamide, without any significant effect on GS, compared to those in untrained animals, but their levels were higher than those in Flutamide-treated untrained animals. These results suggest that endurance training can be used as a non-drug therapeutic modality to lessen the negative effects of antiandrogen therapy on skeletal muscles.

Kew words: endurance training, Flutamide, glycogen, glycogen synthase, irisin.