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Metabolomics profiling distinguishes elite power and endurance athletes

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Background & Aim: The elite performance of professional athletes is associated with alterations in their systemic metabolic profiling. The objectives of this study were to compare the metabolic profiling between low and high power and endurance elite athletes and to highlight the underlying metabolic pathways.

Methods: Sera from 191 elite athletes who passed anti-doping laboratories' tests were profiled using non-targeted metabolomics-based mass spectroscopy combined with ultrahigh-performance liquid and gas. Differences in metabolic signatures were compared between low and high power and endurance groups by OPLS-DA and regression models.

Results & Conclusions: Data reveal that high performance athletes show a distinct metabolic profile that reflects steroid biosynthesis, fatty acid metabolism, oxidative stress and energy-related metabolites. Differences in performance-related metabolic profiles could shed light on the biochemical processes associated with their elite performance and potentially be utilized as biomarkers for endurance or power trainability in athletic candidates.

Biography

Fatima Al-Khelaifi has completed her Master's degree in Genetics from Qatar University (QU) in 2014. She has studied the genomic biodiversity of microalgae and cyanobacteria in Qatar environment that were being tested to be used as biofuel and source of energy. She currently occupies a Research Scientist position at Anti-Doping Lab Qatar, where she assists projects focusing on the role of stem cells in diabetes and genetics and metabolomics of elite athletes. Meanwhile, she is studying the genomics and metabolomics differences between elite power and endurance athletes for her PhD degree at University College London (UCL).

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