AVIS DE SOUTENANCE D'UNE THESE DE DOCTORAT

Le Doyen de la Faculté des Sciences a le plaisir d'informer le public qu'une soutenance de thèse de Doctorat en

« Sciences de la vie et de l'Environnement»

aura lieu le 10/02/2024 à 14:30H à la Faculté des Sciences, Kénitra

La Thèse sera présentée par Mr EL MOKHTAR EL OUALI

Sous le thème :

Genotype and allelic frequencies of the Angiotensin-Coverting Enzyme (ACE), Cluster of Differentiation 36 (CD36) and x-Actinin 3(ACTN3) genes in Moroccan elite athletes and their association with non- contact injuries

Devant le jury composé de :

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Sujet de these

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Résumé

Athletic performance is influenced by numerous factors that includes genetic aspects, susceptibility to injury and the status of elite athletes. An association between genetic polymorphisms and cardiorespiratory capacity, anaerobic performance and muscular strength has been observed. Previous studies indicated important roles for angiotensin-converting enzyme (ACE), cluster of differentiation 36 (CD36) and α-actinin 3 (ACTN3) in athletic performance. Herein we assess the association between ACE I/D rs1799752, CD36 rs1761667 and ACTN3 R577X polymorphisms, elite athlete status and non-contact tissue damage. Genotyping of the ACE gene was performed by PCR, CD36 rs1761667 polymorphisms were identified by Sanger sequencing. For the meta-analyses, odds ratios (OR) and 95% confidence intervals (CI) were calculated using the Cochrane Review Manager (RevMan), employing both fixed and random effects models and the results were visualized using forest plots. Our findings revealed no significant differences in the genotypic and allelic frequencies of the ACE I/D polymorphisms between Moroccan elite athletes and controls, nor between the injured and non-injured groups ($p > 0.05$). However, differences were observed between cyclists and field hockey players in terms of genotypic and allele frequencies of CD36 rs1761667 polymorphisms, with similar frequencies detected in athletes with and without non-contact injuries ($p < 0.00001$). In conclusion, our findings indicate that ACE is not associated with the likelihood of becoming an elite Moroccan athlete or with the susceptibility to non-contact injuries. Specifically, the G allele of the CD36 gene appears to confer potential advantages on cyclists, while the A allele may benefit field hockey players. There was no correlation between the CD36 rs1761667 polymorphism and predisposition to non-contact injuries in Moroccan elite cyclists and field hockey players. Furthermore, our results suggest that the RR genotype and the R allele of the ACTN3 gene may offer some advantages in improving anaerobic exercise performance. Furthermore, athletes carrying X (RX+XX) were more exposed to non-contact tissue damage in elite athletes.

Keywords: Genetics, elite athletes, non-contact injuries, athletic performance, exercise training, endurance athletes, power athletes