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cia e a Tecnologia.

## CO9: NUTRITIONAL SUPPLEMENT USAGE BY ATHLETES IS ASSOCIATED WITH AGE, SPORTING CHARACTERISTICS, AND HEALTHIER AND SPORTS-DIRECTED FOOD CHOICES

**Mónica Sousa<sup>1</sup>, Maria João Fernandes<sup>2</sup>, José Soares<sup>1</sup>, Pedro Moreira<sup>2,3</sup>, Vítor Hugo Teixeira<sup>2,3</sup>**

<sup>1</sup> Centro de Investigação, Formação, Intervenção e Inovação em Desporto da Faculdade de Desporto da Universidade do Porto

<sup>2</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>3</sup> Centro de Investigação em Actividade Física, Saúde e Lazer da Faculdade de Desporto da Universidade do Porto

**INTRODUCTION:** The consumption of nutritional supplements (NS) is an accepted and highly prevalent practice among athletes. However, the considerable frequent lack of scientific informed choices on NS, and the possibility of a failed doping test due to NS contamination are current matters of concern. Healthier food choices have been associated with NS consumers in general populations, but little is known concerning food behaviours of athletes using NS. Understanding the characteristics associated with the NS-user athlete is determinate to better educate, guide, and prevent the misuse and abuse of these substances.

**OBJECTIVES:** We aimed to analyze differences in sociodemographic and sporting characteristics, and food intake of athletes using and not using NS.

**METHODOLOGY:** Three hundred and four high-performance Portuguese athletes from 13 sports completed (i) a NS usage questionnaire, assessing information on sociodemographic (gender, age, height, weight, athlete's and parental education level), and sporting (type, number of international performances, weekly hours of training and of gym) characteristics, and (ii) a semi-quantitative food-frequency questionnaire (86 items), regarding the previous 12 months. To identify miss-reporting, the ratio energy intake (obtained from food data analysis) to basal metabolic rate (estimated using Schofield equations) was used. Under-reporting cut-off was set at 0.9 and ratios  $\geq 4.0$  were considered as over-reporting. Variables were recoded into two categories. Logistic regression with and without adjustment was performed to study associations between all variables and NS usage.

**RESULTS:** The final sample comprised 241 athletes (66% males, 13–37 y). The majority of them (64%) reported to have used NS. After adjustment, supplement usage was associated with being  $\geq 18$  y (odds ratio [OR] 2.57, 95%; confidence interval [CI] 1.17–5.65), performing individual sports (OR 5.45, 95%; CI 2.49–11.93) and  $>2$  h gym/week (OR 2.42, 95%; CI 1.15–5.11), a higher consumption of meat (OR 2.83, 95%; CI 1.36–5.90), eggs (OR 2.53, 95%; CI 1.07–5.96), and yogurt (OR 2.24, 95%; CI 1.08–4.62), and a lower intake of processed meat (OR 0.32, 95%; CI 0.15–0.72), vegetable oils (OR 0.35, 95%; CI 0.17–0.74), margarine (OR 0.37, 95%; CI 0.18–0.76), chips (OR 0.22, 95%; CI 0.10–0.48), and fast food (OR 0.42, 95%; CI 0.19–0.91).

**CONCLUSIONS:** Athletes using NS had different characteristics from non-users, and seem to have healthier and more sports-directed food choices. Characteristics found to be associated with NS usage may help sport and health professionals to identify an alleged or future NS user, enabling the development of a timely and self-directed supplement scheme.

## CO10: MATERNAL PROTEIN RESTRICTION INDUCES RESPIRATORY-SYMPATHETIC OVERACTIVITY AND HIGHER PERIPHERAL CHEMORECEPTOR SENSITIVITY IN MALE RAT OFFSPRING

**José Luiz de Brito Alves<sup>1</sup>, Viviane Oliveira Nogueira<sup>1</sup>, Monique Assis Barros<sup>1</sup>, Débora SA Colombari<sup>2</sup>, Eduardo Colombari<sup>2</sup>, Almir G Wanderley<sup>3</sup>, Carol G Leandro<sup>1</sup>, Daniel B Zoccal<sup>2</sup>, João H Costa-Silva<sup>1</sup>**

<sup>1</sup> Núcleo de Educação Física e Desporto da Universidade Federal do Pernambuco

<sup>2</sup> Departamento de Fisiologia e Patologia da Faculdade de Odontologia de Araquara da Universidade Estadual Paulista

<sup>3</sup> Departamento de Fisiologia e Farmacologia da Universidade Federal do Pernambuco

**INTRODUCTION:** Maternal protein restriction in utero or during the perinatal life (gestation, lactation and first infancy) has been proposed as predisposing factor to the development of arterial hypertension through unknown mechanisms.

**METHODOLOGY:** Pregnant Wistar rats received normoproteic (NP, 17% of protein) or low protein diet (LP, 8% of protein) during gestation and lactation. Male offspring (NP: n=9; LP: n=9) at the 30 days were evaluated for respiratory frequency (Rf), mean arterial pressure (MAP) and heart rate (HR) at rest and during cytotoxic hypoxia (0.04% of KCN) in awake experiments. In addition, we performed direct recording of thoracic sympathetic nervous activity (tSNA) and phrenic nerve (PN) in an in situ rat preparation at rest and during peripheral chemoreflex activation. HIF-1 $\alpha$  expression was evaluated in carotid bifurcation by western blotting assay. The experimental protocol was approved by the Ethical Committee of the Biological Sciences Center (protocol 044454/2010–94) at the Federal University of Pernambuco.

**RESULTS:** At 30 d, LP rats exhibited increased Rf (NP:  $123 \pm 4$  vs. LP:  $142 \pm 3$  cpm,  $P < 0.05$ ), but no change in MAP and HR. During hypoxia, LP showed higher  $\Delta Rf$  (NP:  $105 \pm 13$  vs. LP:  $131 \pm 2$  cpm,  $P < 0.05$ ) and  $\Delta MAP$  (NP:  $22 \pm 4$  vs. LP:  $39 \pm 4$  mmHg,  $P < 0.05$ ), but no change in  $\Delta HR$ . However, the tachypneic response ( $P = 0.14$ ) and bradycardic were similar between the groups ( $P = 0.60$ ). Moreover, at 30 d LP group exhibited higher tSNA (NP:  $8 \pm 2$  vs. LP:  $16 \pm 2$   $\mu V$ ,  $P < 0.05$ ) and higher frequency (NP:  $12 \pm 2$  vs. LP:  $18 \pm 1$  cpm,  $P < 0.05$ ) and amplitude of PN than NP rats (NP:  $5 \pm 0.3$  vs. LP:  $8 \pm 0.6$   $\mu V$ ,  $P < 0.05$ ). During hypoxia, LP rats showed enhanced  $\Delta tSNA$  (NP:  $137 \pm 18$  vs. LP:  $247 \pm 32$  %,  $P < 0.05$ ) and  $\Delta PN$  (NP:  $15 \pm 2$  vs. LP:  $22 \pm 2$  cpm,  $P < 0.05$ ). LP rats showed higher HIF-1 $\alpha$  expression in carotid bifurcation (91%).

**CONCLUSIONS:** Rats subjected to perinatal protein restriction had sympathetic-respiratory overactivity and high  $O_2$  chemosensitivity associated increased HIF-1 $\alpha$  pathway at early age. These findings suggest that increased arterial blood pressure observed in adulthood could be associated to respiratory and sympathetic overload.

**SUPPORT:** FACEPE, CNPq and FAPESP

## CO11: DINÂMICA CLONAL DE SALMONELLA TYPHIMURIUM, S. 4,[5],12:I:- E S. RISSEN NA ÚLTIMA DÉCADA EM PORTUGAL

**Sara Marçal<sup>1</sup>, Joana Campos<sup>2</sup>, Joana Mourão<sup>2</sup>, Jorge Machado<sup>3</sup>, Luísa Peixe<sup>2</sup>, Patrícia Antunes<sup>1,2</sup>**

<sup>1</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>2</sup> UCIBIO-REQUIMTE da Faculdade de Farmácia da Universidade do Porto

<sup>3</sup> Departamento de Doenças Infecciosas do Instituto Nacional de Saúde Doutor Ricardo Jorge

**INTRODUÇÃO:** As infeções por *Salmonella* não tifoide representam um problema global de saúde pública, sendo crucial identificar e seguir clones de serótipos clinicamente relevantes para combater a sua disseminação.

**OBJETIVOS:** Este estudo teve como objetivo caracterizar a clonalidade e a resistência a antimicrobianos em isolados portugueses (2009-2014) de *S. Typhimurium*, *S. 4,[5],12:i:-* e *S. Rissen*, serótipos clinicamente relevantes, e comparar os resultados obtidos com dados anteriores (2002-2009).

**METODOLOGIA:** Analisaram-se isolados de *S. Typhimurium* (n=253, *S. 4,[5],12:i:-* n=158 e *S. Rissen* n=26) provenientes de diferentes origens (humanos/alimentos/animais) e de várias regiões de Portugal (2009-2014). Efetuou-se a pesquisa de genes de resistência às sulfonamidas (*sul1/sul2/sul3*) e de genes relacionados com integroões de classe 1 (*int1*/genes *qac*/cassetes de genes de resistência a antibióticos) por PCR. Em isolados representativos, determinou-se a suscetibilidade a 10 antibióticos [ampicilina-A/cloranfenicol-C/gentamicina-G/canamicina/ácido nalidixico/ciprofloxacina-S/sulfametoxazol-Su/tetraciclina-T/trimetoprim-Tr] pelo método de difusão em agar com discos (CLSI/EUCAST), a