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Bollettino della Società Italiana di Biologia Sperimentale



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The bioactive compounds γ -aminobutyric acid (GABA) and the protein-free amino acids were measured in Fiore Sardo, a typical cheese produced in Sardinia. GABA is a non-protein amino acid which could have a beneficial impact on human health. The presence in the diet of this nitrogenous compound might have positive effects on metabolic disorders. A total of 45 cheese samples were collected from 6 dairy farms to evaluate GABA content and its relationship with free amino acids (FAA) and composition. The following were determined for each sample: pH, water activity, moisture, dry matter and NaCl. GABA and FAA were determined by HPLC-FL after derivatization with dansyl chloride. Great variability in the content of the nitrogenous compounds considered was found: the level of GABA ranged between 3 and 103 mg 100 g⁻¹. Overall 30% of the samples analysed have shown a content of GABA higher than that measured in other types of Italian typical cheeses. GABA content was positively correlated with FAA and pH ($P \leq 0.01$) whereas not significant correlation was found with a_w and humidity. To identify similarities and correlations between the samples of cheeses, the hierarchical cluster analysis (HCA) was performed using 37 objects and 6 variables. By mean of HCA was possible to assess that Fiore Sardo cheese characteristics differ from one producer to another; however, it seems quite constant within each firm over time.

METABOLIC RATES DURING DAILY LIVING ACTIVITIES IN PEOPLE WITH MULTIPLE SCLEROSIS

Gianluca Martinez¹, Lucia Ventura¹, Antonella Cano^{1*}, Elena Aiello², Andrea Manca¹, Franca Deriu¹

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Persons with multiple sclerosis (PwMS) exhibit lower values than healthy controls in peak aerobic capacity (VO₂peak), ventilatory anaerobic threshold (VAT), peak respiratory exchange ratio (RERpeak), peak heart rate (HRpeak) and peak work rate (WRpeak). Whether they use more energy than healthy controls during submaximal activities is less clear. Moreover, no data are yet available on the metabolic rate of PwMS during daily living activities (ADL), which are basic tasks that must be accomplished every day for an individual to maintain independence and are used as a measurement of a person's functional status. The present cross-sectional case-control study was aimed at measuring the energetic cost of a composite set of basic ADL, including dressing, toileting, transferring and mobility, as derived by validated rating scales. A portable, open-circuit gas analyzer system (MetaMax 3B, Cortex Medical, Germany) was employed to monitor the metabolic rate during 13 basic ADL assessed over 2 non-consecutive days in 10 PwMS (5 with moderate-to-severe disability; 5 with very mild disability) and in 5 age- and gender-matched healthy control subjects. Activities were monitored for at least 5 minutes and followed by a 5-minute complete rest. Compared to controls and mildly disabled PwMS, more disabled individuals showed significantly higher VO₂,

VCO₂ and HR, but not RER, values during dressing, car usage, doing laundry and climbing stairs. Interestingly, significant differences in metabolic rate were also found between mildly disabled PwMS and controls. Open-spirometry outcomes during every-day life may contribute to enhance our understanding of the pathophysiology of MS-linked fatigue.

MERLUCCIUS MERLUCCIUS AND CHLOROPHTALMUS AGASSIZI: SIMILARITY AND DIFFERENCES OF MICROPLASTICS INGESTED

Giuseppe Panarello^{1*}, Serena Savoca¹, Gioele Capillo¹, Teresa Bottari^{2,3}, Monique Mancuso^{2,3}, Marco Albano¹, Nunziacarla Spanò⁴

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Microplastics ingestion by demersal fauna is a topic of great scientific interest, especially related to both organisms contamination and trophic transfer throughout the food web. The aim of this study was to explore the differences of ingestion rate between two high value commercial species: *Merluccius merluccius* and *Chlorophthalmus agassizi*. An experimental trawling survey performed in the southern Tyrrhenian Sea during 2017, allowed the evaluation of microplastics ingestion rate in the hake and shortnose greeneye. The European hake is widely distributed in the Eastern Atlantic, Mediterranean Sea and along the southern coast of the Black Sea. The shortnose greeneye lives both in temperate and tropical Sea like Eastern Atlantic, Mediterranean Sea, Western Atlantic and Northwest Atlantic. *M. merluccius* and *C. agassizi* share similar depth ranges, and feeding behaviours. Specimens of both species were frozen immediately on board. In order to avoid environmental contamination, all the specimens were measured. Organisms dissection, gastrointestinal tracts isolation and the evaluation of their stomach content, have been carried out under fume hood, using a stereomicroscopy for the microplastics (MPs) identification. Results highlighted that of the 67 European hake 46.3% ingested black plastic fibres. While of the 43 examined shortnose greeneye the contamination by both black and blue plastic fibers reached 21%. The results of present study highlight the ingestion of fibre-shaped microplastics in both fish species, suggesting a relationship between the contaminant shape and trophic behaviour of organisms.

LEVETIRACETAM TREATMENT AMELIORATES LRRK2 PATHOLOGICAL MUTANT PHENOTYPE

Mauro Rassu, Alice Biossa, Manuela Galioto, Milena Fais*, Paola Sini, Elisa Greggio, Giovanni Piccoli, Chiara Camoglio, Fabrizio Fae, Mai Uyên Thi Trần, Claudia Crosio, Ciro Iaccarino

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Mutations in Leucine-Rich Repeat Kinase 2 (LRRK2) are the