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were separated into three experimental groups: young *ad libitum* (3-month-old, Y-AL group, N = 10), older *ad libitum* (22-month-old, O-AL group, N = 10), and older subjected to a 40% CR treatment during the last 3 months prior to the 22 months of age (O-CR group, N = 5). Cognitive performance was assessed using the Barnes Maze (BM) test for spatial learning and memory and the New Object Recognition (NOR) test for contextual learning. In the BM test, we observed that the O-CR rats presented a shorter distance traveled on the platform, similar to Y-AL group. We did not find significant differences between O-CR and O-AL animals in the rest of the parameters analyzed with BM test (exploratory frequency of the target region, total exploratory activity, numbers of errors in reaching around the target hole, escape box latencies, percentage of exploration of the meta holes). In the NOR test, again we did not find significant differences between old animals and those subjected to CR. To date, the studies carried out on the effects of CR on cognitive functions are inconclusive and depend on the used protocol. The effects of CR depend on its intensity, the period of life in which the treatment begins and its duration. Our studies are preliminary, with a first group of animals in CR (N = 5), therefore increasing the number of studied animals could provide more conclusive data. CR could be a non-pharmacological alternative for maintaining mental and cognitive health during aging.

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CONTENT OF ZINC, MACRONUTRIENTS AND FIBER IN MENUS OFFERED IN ELDERLY HOMES. "MACA ANDINA" AS A SUPPLEMENTATION PROPOSAL IN THE FACE OF ZINC DEFICIENCY

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The biochemical and physiological changes that accompany the aging process, associated with the components of institutionalized life, have clear implications for the nutritional status of the elderly, making them more susceptible to nutritional deficiencies. The purpose of this research was to know the average nutritional values of zinc, macronutrients and total fiber of lunches and dinners offered to the elderly between 75 and 90 years old, who reside in long-term accommodation centers in the province of San Luis, Argentina, and furthermore, in case of zinc deficiency, suggest supplementation with "maca andina" (*Lepidium meyenii*). The study was carried out in two stages, one of them included an observational design with a cross-sectional correlational descriptive scope, and the other one involved an experimental design, being the sampling of probabilistic and multistage type. The sample was made up of 44 menus, which were classified into menus without meat (N = 22) and menus with meat (N = 22). The nutritional composition of all the menus (with and without meat) was analyzed using the SARA software. In addition, an experimental analysis of the meat-free menus was carried out (for which 3 types of menus were taken) and "maca andina" was also analyzed in triplicate, using the corresponding analytical techniques. The composition per serving of the meat-free menus was: 497.69 kcal, 58.26 g of carbohydrates (CHO), 15.81 g of proteins, 21.59 g of total lipids, 6.31 g of total fiber, and 2.29 mg of zinc. In the menus with meat, the average nutritional composition per serving was: 542.97 kcal, 49 g CHO, 27.76 g of proteins, 22.23 g of total lipids, 5.29 g of total fiber, and 4.31 mg of zinc. In relation to the recommendations established for dining rooms for the elderly, the meat-free menus covered 86.88% of kcal, 70.12% of CHO, 95.91% of proteins, 142.1% of lipids, 77.01% of total fiber, and 80.09% of zinc. Menus with meat contributed 86.17% of kcal, 53.72% of CHO, 160.7% of proteins, 113% of lipids, 63.69% of total fiber, and 151.3% of zinc. It was observed that both the composition and the percentage of protein and zinc adequacy was significantly higher in the meat menus ($P < 0.05$). Zinc deficiency was observed on meat-free menus. The experimental composition of the analyzed meat-free menus was as follows: menu n° 1 showed a deficit of all its components except for lipids, menu n° 2 showed adequate fiber and zinc coverage and menu n° 3 showed adequate caloric and zinc intake. Finally, when analyzing the zinc content in "maca andina", it was found that it provides 18.58 mg zinc/100 g; therefore, zinc deficient menus would cover the recommendations for this trace element with one tablespoon (15 g) of it. Due to its easy access and high nutritional value, "maca andina" could be beneficial to supplement diets deficient in this trace element.

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EFFECT OF A PPARγ SYNTHETIC AGONIST ASSOCIATED WITH RETINOIC ACID ON 24-HOUR RHYTHMS IN THE HIPPOCAMPUS OF AN EXPERIMENTAL MODEL OF ALZHEIMER'S DISEASE

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Alzheimer's disease (AD) is the most frequent cause of dementia in the older adults. The main pathogenic mechanism in sporadic AD is the decrease in amyloid beta peptide (Aβ) clearance. It is known that Apolipoprotein E (Apo E) modulates Aβ deposition and clearance. ApoE expression is transcriptionally induced by PPARγ in coordination with RXRs. Previously, we found that an intracerebroventricular injection of Aβ(1-42) modified the daily rhythms of Apo E, Bmal 1, and Aβ in the rat hippocampus. Taking into account those observations, the objective of this work was to investigate the effects of synthetic PPARγ agonist, pioglitazone, and retinoic acid (Pio-RA) on the 24-h rhythms of Apo E, BMAL1 and Aβ protein levels, as well as on the daily rhythms of brain-derived neurotrophic factor (Bdnf) and its receptor (TrkB) expression in the rat hippocampus. In this study, male Holtzman rats from control, Aβ-injected (Aβ) and Aβ-injected treated with Pio-RA groups were euthanized throughout a 24-h period and hippocampus samples were isolated every 6 h. Apo E, BMAL1 and Aβ proteins levels were analyzed by immunoblotting and Bdnf and TrkB mRNA levels were determined by RT-PCR. Regulatory regions of Apo E and clock genes were scanned for E-box, RORE, RXRE and PPRE sites. We observed that the treatment of Pio-RA reestablished the daily rhythms of Apo E, Aβ, BMAL1 protein, and Bdnf mRNA levels. This treatment also increased Bdnf and TrkB levels. We found E-box, RXRE, and PPRE sites on regulatory regions of Apo E and Bmal1 genes. The results of the present study could suggest that the treatment of Pio-RA would not only restore the altered rhythmic patterns of the clock genes and their target genes observed in animals injected with Aβ aggregates, but also, interestingly, would increase the levels of cognition-related genes, which are decreased in Alzheimer's patients.