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PHOSPHATIDYLSERINE, RESVERATROL, COENZYME Q10 AND CIANOCOBALAMINE SUPPLEMENTION IS ASSOCIATED WITH CHANGES IN SUBJECTIVE MEMORY COMPLAINTS AND GERIATRIC DEPRESSION SCALE IN ADULTS AND OLDER PERSONS IN PORTUGAL

N. Rodrigues Tavares[1], A. Gomes[2], L. Tenreiro[3]

Abstract: Memory loss is a major complaint among the elderly population. Claimed to enhance cognitive function and readily accessible in pharmacies and food stores, phospholipids supplementation has produced mixed findings in several studies. A group of healthy adults and elderly (n= 915) aged 65.65±11.10 years with an education level of 7.56±4.56 years participated in the study. Participants were submitted to the Mini-Mental State Examination (MMSE), Scale Memory Complaints (SMC) and Geriatric Depression Scale (GDS). Four individuals presented cognitive impairment, 874 presented memory complaints and 436 were above cut-off point for GDS. Subsequently, one women group (n=48) used phospholipids supplementation for 4 weeks. After the period of supplementation, a decrease in mean SMC and GDS values were observed. Phospholipids consumption over the course of 4 weeks significantly decreased SMC (p=0,000) and GDS (p=0.009) values in this women group.

Key words: Cognitive function, memory enhancement, supplementation, phosphadtidylserine.

Introduction

Memory loss is one of the most common complaints arising in consultations with elderly people, being reported by 25% to 50% of these individuals (1). Subjective memory complaints are common and strongly associated with age. Estimates of their community prevalence have ranged from 11% (2) in 65 to 85 year olds to over 88% in those over the age of 85 years (3). There is uncertainty regarding the significance of SMC. They may be an early marker of cognitive decline with an underlying pathological basis, a feature of normal ageing and/or a reflection of psychological distress. Memory complaints in elderly people should no longer be considered merely as an innocent age-related phenomenon or a symptom of depression. Instead, these complaints deserve to be taken seriously, at least as a possible early sign of dementia (4). The GDS is suitable as a screening test for depressive symptoms in the elderly. It is easy to administer, needs no prior psychiatric knowledge and has been well validated in many environments (5, 6).

Phosphatidylserine categorized as phospholipid derived from plant source, exist in several food supplements. Research on this substance has produced mixed findings. In one study, 149 patients who met the criteria for age-associated memory impairment were treated for 12 weeks with a formulation of phosphatidylserine or placebo (7). Patients in the treatment group improved on performance tests related to learning and memory and tasks of daily life. However, no positive effects were found in another study of 120 adults with memory complaints (8). Reviewed clinical trials about the efficacy of phosphatidylserine, concluded that it provides significant improvements in memory, learning, concentration, word recall, and mood in middle-aged and elderly individuals with age-related cognitive decline or dementia (9). Other investigators also found that the substance had a significant effect, and the intended effect was maintained for 12 weeks (10).

The present study aimed to investigate the changes on SMC and GDS after phosphatidylserine supplementation in a population of adults and elderly from the Lisbon

1. CBIOS, Faculdade de Ciências e Tecnologias da Saúde, Universidade Lusófona, Campo Grande 376, 1649-024 Lisboa, Portugal; 2. ISPA, Rua Jardim do Tabaco 34, 1149-041 Lisboa, Portugal; 3. Instituto Superior Técnico, Avenida Rovisco Pais 1, 1049-001 Lisboa, Portugal

Corresponding Author: Nelson Rodrigues Tavares, CBIOS, Faculdade de Ciências e Tecnologias da Saúde, Universidade Lusófona, Campo Grande 376, 1649-024 Lisboa, Portugal, nelson.tavares@ulusofona.pt

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metropolitan area.

Materials and Methods

Nine hundred and eighty nine healthy adults and elderly from the Lisbon metropolitan area were interviewed by a psychologist between June 2012 to September 2013. Participants were informed for the purpose of the protocol. Nine hundred and fifteen individuals volunteered after interview and were recruited in accordance with the current revision of the Helsinki Declaration of 2013 (11). Informed consent was obtained from individuals. Inclusion criteria were absence of neurological or psychiatric diseases according to individuals information, absence of depression, no use of benzodiazepines, antidepressants or neuroleptics and less than 41 years.

All were submitted to the MMSE 1(2, 13), GDS (14, 15) and SMC (16, 17). Performance on the MMSE was adjusted for educational level and had to be greater than 15 for 0 years of schooling, greater than 22 for 1-11 years and greater than 27 for individuals with 11 years or more of schooling. Scores on GDS had to be less than or equal to 10 points in order to rule out depression, the version with 30 items was used. On SMC no relevance was considered for values less than 3 points.

A Food supplement currently sold in pharmacies and food stores in Portugal, containning Phosphatidylserine, Cianocobalamine, Coenzyme Q10 and Resveratrol was taken once a day before breakfast for 4 weeks. Those who started supplementation with phosphatidylserine were asked for an interview after 4 weeks and GDS and SMC were applied.

All statistical analyses were carried out with SPSS 15.0 for Windows (SPSS Inc., an IBM Company, Chicago, IL, USA) with data presentation as means ± standard deviation (SD). t test was conducted for significant differences between means of 4 week values at $p<0.05$.

Results

Because there was no gender difference, data for men and women were subsequently combined for all data analysis. Nine hundred and fifteen subjects older than 40 years (range 41-94 years) were recruited in the community and included in the study. Women represent 80,76 percent of total study population (Table 1). After adjustment for educational level four individuals had MMSE ≤15 (Table 2). Geriatric depressive scale assessment were ≤10 for four hundred seventy-nine subjects (Table 3). Without relevance memory complaints were found forty-one (Table 4). The food supplement with phosphatidylserine was studied in one women group (n=48). There was no significant correlation between GDS and SMC at baseline (data not shown). Analysis indicated statistically significant differences between baseline and after 4 weeks of supplementation for SMC and DGS was evident at 32 days compared to baseline (Table 5).

Table 1
Demografic data

n=915	
Age	65.65±11.10*
Gender	739:176†
Education	7.56±4.56‡
Living arrangements	
Alone	316
With others	599

*Values are mean±SD; †Female/Male; ‡Years

Table 2
Mini-Mental State Examination results

MMSE	n=915	Mean±SD
≤15	4	8,25±5,56
>15 e ≤22	22	20,23±1,66
>22 e ≤27	279	26,00±1,16
>27	610	28,95±0,77

Table 3
Geriatric Depression Scale results

GDS	n=915	Mean±SD
≤10	479	5.00±3.27
> 10 e ≤20	341	15.08±2.62
>20	95	23.49±2.24

Table 4
Subjective Memory Complaints results

SMC/EQM	n=915	Mean±SD
<3	41	1.56±0.67
≥3	874	8.25±3.08

Table 5
Demografic data for women supplemented group

n=48	
Age	63.81±8.85*†
Education	6.83±3.80†
Living arrangements	
Alone	12
With others	36

*Values are mean±SD; †Years

Table 6
Geriatric Depression Scale and Subjective Memory Complaints at baseline and after 4 weeks dietary supplement utilization

n=48	Baseline	After 4 weeks	P*
GDS	13.79±5.96	12.21±6.51	0.009
SMC	9.92±3.15	7.69±2.65	0.000

*Comparision of means (t-test); P<0.05 considered statistically significant.

Discussion

We found that supplementation with Phosphatidylserine once a day before breakfast significantly decreased SMC means values (p=0.000) and GDS mean values (p=0.009) over the course of 4 weeks in this women group. We observed this effect in a trial, with subjects compliance monitored over intervention period. The study's objective was to evaluate the effect of phosphatidylserine supplementation on results obtained from GDS and SMC scales.

High age, female gender and low education have all been associated with increased prevalence of SMCs. Our sample is composed mainly by elderly subjects with a predominance of women (739 vs.176) and a low to middle educational level, comparing with other studies (18, 19). This features might explain the very high percentage of individuals presenting SMCs. Memory complaints are recognized to be frequent within elderly population especially among those with depressive symptoms (20, 21). In the study depression is very unlikely as an explanation for the high prevalence of SMCs, since the presence of depressive symptoms was part of the exclusion criteria. An issue that has not been addressed in the study is the type of SMC. It must be recognized that in the present study the evaluation of memory complaints was based on a single scale, the subjective memory complaints scale. Although this scale has items considered representative of common memory complaints 16, the results may not necessarily be generalizable to other instruments of memory complaints evaluation (22). In a meta-analysis, living arrangements appear related to the risk for depression in the older population. Older persons living alone, in a nursing home, or in an institutionalized setting have higher risk for depression (23). In our study only 34.5% of subjects live alone and 47.7% were above cut-off point for GDS.

This study will need to be repeated with placebo controls. In summary, results from this study shows that after the period of supplementation, a decrease in mean SMC and GDS values were observed. Phospholipids consumption over the course of 4 weeks significantly decreased SMC and GDS (p<0,05) values in this women group.

Conflict of interests: The authors declare that there are no financial and personal relationships that could be viewed as presenting a potencial conflict of interests.

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