HUBUNGAN KADAR *BRANCHED CHAIN AMINO ACID* SERUM DENGAN FUNGSI KOGNITIF PADA LANJUT USIA

TESIS

Oleh :

WILLYA EKA PUTRI

2120312001

Pembimbing:

Prof. dr. Nur Indrawaty Lipoeto MSc, Phd, SpGK

Dr. dr. Roza Mulyana, SpPD, KGer, FINASIM

ILMU BIOMEDIS PROGRAM MAGISTER

FAKULTAS KEDOKTERAN

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ABSTRAK

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Willya Eka Putri, Nur Indrawaty Lipoeto*, Roza Mulyana**
Fakultas Kedokteran, Universitas Andalas

Pendahuluan : Kognitif adalah tindakan atau proses mental untuk memperoleh pengetahuan dan pemahaman melalui pikiran, pengalaman, dan indra. Proses penuaan mengakibatkan fungsi kognitif akan semakin menurun seiring bertambahnya usia. Malnutrisi termasuk salah satu faktor yang bisa mempengaruhi fungsi kognitif pada lanjut usia termasuk protein. *Branched Chain Amino Acid* (BCAA) merupakan asam amino esensial yang hanya bisa didapatkan dari makanan. BCAA merupakan donor utama nitrogen untuk sintesis glutamat yang berperan dalam fungsi kognitif yaitu pembentukan memori. Salah satu BCAA yaitu leusin merupakan aktivator poten dari *mammalian target of rapamycin* (mTOR) yang berperan dalam plastisitas dan transformasi sinaptik pada pembentukan memori. Penurunan kadar BCAA serum dapat mempengaruhi fungsi kognitif pada lansia. Penelitian ini bertujuan untuk mengetahui hubungan kadar BCAA serum dengan fungsi kognitif pada lansia.

Metode: Penelitian penelitian observasional analitik dengan pendekatan *cross-sectional*, variabel dependen yaitu kadar BCAA serum dan variabel independen yaitu skor MoCA-Ina diperiksa secara bersamaan. Sebanyak 25 sampel yang memenuhi kriteria inklusi dan eksklusi dilakukan pemeriksaan BCAA serum menggunakan *High Performance Liquid Chromatography* (HPLC) dan MoCA-Ina. Selanjutnya dilakukan analisis statistik uji korelasi Spearman.

Hasil : Dari 25 sampel, 64% sampel adalah perempuan. Didapatkan kadar BCAA serum dengan rerata 0,40mM(0,15), rerata kadar leusin 0,09(0,06), rerata kadar Isoleusin 0,05(0,02) dan rerata kadar valin 0,26(0,10) serta rerata skor MoCA-Ina 21,20(4,97). Analisis dengan korelasi Spearman antara BCAA, leusin, isoleusin dan valin dengan skor MoCA-Ina. Didapatkan hasil tidak ada korelasi antara BCAA, leusin, isoleusin, dan valin dengan skor MoCA-Ina

Kesimpulan : Tidak terdapat korelasi antara BCAA, leusin, isoleusin, dan valin dengan skor MoCA-Ina

Kata Kunci : Lanjut Usia, BCAA, leusin, isoleusin, valin, MoCA-Ina, gangguan kognitif

ABSTRACT

RELATIONSHIP BETWEEN SERUM BRANCHED CHAIN AMINO ACID LEVELS AND COGNITIVE FUNCTION IN THE ELDERLY

Willya Eka Putri, Nur Indrawaty Lipoeto*, Roza Mulyana** Faculty of Medicine, Andalas University

Introduction: Cognitive is an act or mental process to gain knowledge and understanding through thoughts, experiences, and senses. The aging process causes cognitive function to decline with age. Malnutrition is one of the factors that can affect cognitive function in the elderly, including protein. Branched Chain Amino Acid (BCAA) is an essential amino acid that can only be obtained from food. BCAA is the main donor of nitrogen for glutamate synthesis which plays a role in cognitive function, namely memory formation. One of the BCAAs, leucine, is a potent activator of the mammalian target of rapamycin (mTOR) which plays a role in plasticity and synaptic transformation in memory formation. Decreased serum BCAA levels can affect cognitive function in the elderly. This study aims to determine the relationship between serum BCAA levels and cognitive function in the elderly.

Method: This observational analytical study with a cross-sectional approach, the dependent variable, namely serum BCAA levels and the independent variable, namely MoCA-Ina scores, were examined simultaneously. A total of 25 samples that met the inclusion and exclusion criteria were examined for serum BCAA using High Performance Liquid Chromatography (HPLC) and MoCA-Ina. Furthermore, statistical analysis of the Spearman correlation test was carried out.

Results: Of the 25 samples, 64% of the samples were female. The serum BCAA levels were obtained with an average of 0.40 mM (0.15), the average leucine level was 0.09 (0.06), the average Isoleucine level was 0.05 (0.02) and the average valine level was 0.26 (0.10) and the average MoCA-Ina score was 21.20 (4.97). Analysis with Spearman correlation between BCAA, leucine, isoleucine and valine with the MoCA-Ina score. The results showed that there was no correlation between BCAA, leucine, isoleucine, and valine with the MoCA-Ina score

Conclusion: There is no correlation between BCAA, leucine, isoleucine, and valine with the MoCA-Ina score

Keywords: Elderly, BCAA, leucine, isoleucine, valine, MoCA-Ina, Cognitive disorde