Turkish Journal of Biochemistry | Ahead of Print

The association of methylene tetrahydrofolate reductase (MTHFR) A1298C gene polymorphism, homocysteine, vitamin B12, and folate with coronary artery disease (CAD) in the north of Iran

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DOI: https://doi.org/10.1515/tjb-2019-0340 | Published online: 20 Jul 2020

Abstract

Background

We pursued to find out the possible association of Methylene tetrahydrofolate reductase (MTHFR) A1298C gene polymorphism, blood homocysteine, vitamin B12, and folate with Coronary artery disease (CAD) in the study population in Guilan, north of Iran.

Material and Methods

Ninety patients with CAD and 76 healthy controls were evaluated. MTHFR A1298C polymorphism and its genotype frequency, the plasma level of homocysteine, vitamin B12 and folate were evaluated by using ARMS-PCR, ELISA, and Chemiluminescence methods, respectively.

Results

The frequency of genotypes, A, AC and CC in CAD were 40, 35.6, 24.4%, respectively which was significantly different ($p=0.016$) from the control group that were 26.3, 57.9 and 15.8%, respectively. The serum level of vitamin B12 and

folate in genotype A1298C were not statistically significant between two groups ($p>0.05$), however, the plasma homocysteine in patients with CAD was remarkably higher than the control group ($p<0.001$). Additionally, in CAD patients the plasma level of homocysteine in the AC genotype was significantly higher than the control subjects ($p=0.005$).

Conclusion

It is thus concluded that MTHFR A1298C gene polymorphism is associated with CAD. It seems that the AC genotype of MTHFR A1298C polymorphism might have a protective effect on CAD.

Keywords: A1298C; coronary artery disease; homocysteine; MTHFR; polymorphism

ARTICLE INFORMATION

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Received: 2019-08-14

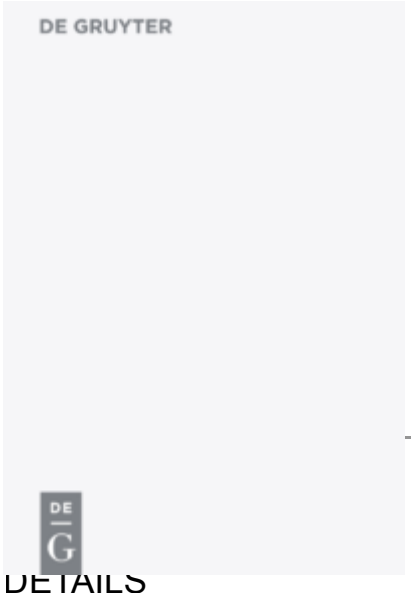
Accepted: 2020-05-11

Published Online: 2020-07-20

Citation Information: Turkish Journal of Biochemistry, 20190340, eISSN 1303-829X, ISSN 0250-4685, DOI: https://doi.org/10.1515/tjb-2019-0340.

JOURNAL + ISSUES

Turkish Journal of Biochemistry



DETAILS

Online ISSN: 1303-829X

First published: 08 Apr 2015

Language: English

Publisher: De Gruyter

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