MEG3 polymorphisms associated with peripheral blood leukocyte telomere length in PAHs exposure workers

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March 10, 2023

Abstract

This study aimed to explore the effect of MEG3 genetic polymorphisms on telomere length (TL) in Polycyclic aromatic hydrocarbons (PAHs) exposure populations. The 544 PAHs-exposure workers and 238 controls were recruited, and urinary OH-PAHs concentrations were determined with high-performance liquid chromatography. The TL was measured using a quantitative polymerase chain reaction. The MEG3 genetic polymorphisms were detected by the flight mass spectrometry platform. The TL in the exposure group (4.57±0.84) was significantly lower than the controls (5.00±0.75), and TL had a negative correlation with OH-PAHs. Generalize linear model found that PAHs-exposure [β(95%CI) = -0.409(-0.537, -0.282), P <0.001], age (years) [β(95%CI) = -0.010(-0.019, -0.002), P = 0.018], and genotype CT+TT for MEG3 rs10132552 [β(95%CI) = -0.299(-0.582, -0.017), P = 0.038] were associated with the decreased TL. In conclusion, PAHs-exposure and genotype CT+TT for MEG3 rs10132552 may be the risk factors for TL. And TL may decrease with age, BMI, and urinary OH-PAHs.

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March 8, 2023

Dear Editors:

Please find attached a research article entitled, "*MEG3*polymorphisms associated with peripheral blood leukocyte telomere length in PAHs exposure workers", by Xinling Li, Xiaoran Duan, Meiye Wang, and Wei Wang. I would like to declare on behalf of my co-authors that the work described was original research that has not been published previously, and is not under consideration for publication elsewhere, in whole or in part. All the authors listed have approved the manuscript that is enclosed.

According to the journal's aims and scope, our study could provide a reference for

mechanistic elucidation of DNA damage upon exposure to Polycyclic aromatic hydrocarbons (PAHs) at molecular levels. Furthermore, a growing amount of evidence utilizing long non-coding RNA maternally expressed gene 3 (*MEG3*) engages in telomere length maintenance and homeostasis. Epidemiological studies have shown that PAHs exposure could reduce telomere length. However, it is unknown whether polymorphisms in the *MEG3* could influence the telomere length in PAHs-exposure populations. In this study, we screened 10 polymorphisms in *MEG3*to investigate the susceptible genotype of the PAHs-exposure populations. And the results showed that PAHs-exposure and genotype CT+TT for *MEG3* rs10132552 may be a risk factor for telomere length.

We would be grateful if this paper could be considered for publication in Environmental & Molecular Mutagenesis. We deeply appreciate your consideration of our manuscript, and we look forward to receiving comments from the reviewers.

Thank you and best regards.

Yours sincerely

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