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Parabiotic of *Lacticaseibacillus paracasei* strain Shirota as Potential PAHs Degradar

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Structured Abstract

Background: Food, which is the most important source of energy to humans, is the source of various diseases. Food can be harmful when they are exposed to carcinogenic compounds such as Polycyclic aromatic hydrocarbons (PAHs) and human are easily exposed to PAHs through consumption of food. 79-99% of human are proved to be exposed to PAHs through food consumption with total of 2.5µg per day thus making the quality and safety of food pertinent issues. *Lacticaseibacillus paracasei* strain Shirota (LcS) is a probiotic that can survive in human's digestive system and can interfere in food modification that happened in human gut. Thus, probiotic and its component such as parabiotic which referred to inactive probiotic are believed to provide help in disturbing PAHs modification in food when it enters human body by degrading it.

Methods: Parabiotic component of *Lacticaseibacillus paracasei* strain Shirota (LcS) was obtained by collecting pellet from Yakult drink through centrifugation. The Polycyclic aromatic hydrocarbons (PAHs) which is naphthalene was prepared by mixing the concentrated naphthalene with acetonitrile. Both parabiotic of LcS and naphthalene were mixed in MRS broth and incubated for reaction to happened. The sample was incubated for 0,2,4,6, and 24 hours. The reaction of degradation was analysed for its turbidity, pH and gas chromatography-mass spectrometry (GCMS).

Results: This study shows that turbidity of medium containing naphthalene and parabiotic LcS decreased after 24 hours incubation . This indicates that degradation happened . In relation to decrease of turbidity, the pH of medium containing both parabiotic LcS and naphthalene increased and strive to neutral which showed that the density and toxicity of naphthalene were decreased after incubated with parabiotic. The degradation peak by GCMS also was declined when comparing 0 hours and 24 hours incubation.

Conclusion: In conclusion, decreased of turbidity and GCMS peak and increased of pH indicates that parabiotic of LcS can degrade naphthalene in the medium. The longer incubation period is preferred to give more time to parabiotic LcS to degrade naphthalene.

Keywords: *Lacticaseibacillus paracasei* strain Shirota (LcS),Naphthalene, parabiotic, Polycyclic aromatic hydrocarbons (PAHs),

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