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4P-0939 **Natural polyamines inhibit adhesion of human peripheral blood mononuclear cells to human umbilical vein endothelial cells by suppressing LFA-1**

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Objective: Several so-called anti-atherogenic foods, such as cheese, yogurt, and soybean contain a large amount of polyamines. In this study, the effects of polyamines on the adhesion capacity of human peripheral blood mononuclear cells (PBMCs) to endothelial cells, that are considered to be the initial step of atherogenesis, were investigated.

Methods: Human PBMCs from volunteers were cultured in RPMI-1640 supplemented with 10% human serum with or without adding spermine, spermidine, or putrescine. The effect of these polyamines on adhesion of PBMCs to cultured human umbilical vein endothelial cells (HUVECs) was examined. The expression of adhesion molecules (CD11a and CD18) was also estimated by flow cytometry.

Results: PBMCs cultured either with spermine or spermidine, but not putrescine, decreased their ability to adhere to HUVECs and to plastic, in a dose-dependent manner. The decreases in adhesion capacity were not observed in PBMCs cultured for 24 hours with spermine and spermidine. However, when these PBMCs were subsequently cultured in polyamine-free culture medium for additional 48 hours, a decrease in their adherent capacity became apparent. The decreases of adherent capacity were accompanied by a decrease in the mean fluorescence intensity of CD11a and CD18. Spermine and spermidine did not affect the cell viability, and even enhanced lectin-induced cell activation.

Conclusion: The natural polyamines, spermine and spermidine, decrease the adherent capacity of human PBMCs by suppressing LFA-1. Since polyamines in food are absorbed immediately and incorporated into cells of the body as an original form, their effect on leukocyte adhesion is considered to be one of the mechanisms by which polyamine-rich foodstuffs exhibit the anti-atherogenic effect.