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Anti-platelet Aggregation and Anti-blood Coagulation Activities of Dipicolinic Acid, a Sporal Component of *Bacillus Subtilis Natto*

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The effects on blood coagulation of dipicolinic acid (DPA, 2,6-pyridinedicarboxylic acid), an antibacterial substance known to be produced by *Bacillus subtilis natto* and contained in natto, a traditional Japanese fermented soybean food, were studied. It was found that addition of DPA with a final concentration of 5×10^{-3}M results in substantial inhibition of platelet aggregation. DPA inhibition was found to be far stronger than that resulting from addition of aspirin. Furthermore, the clotting reaction of thrombin-fibrinogen was also found to be inhibited by DPA. It was confirmed by examination of thromboelastogram patterns that the coagulation of whole rat blood was completely inhibited by addition of 5×10^{-3}M DPA. From the point of view of the blood coagulation system, these results show that DPA contained in natto may be effective in the prevention of thrombosis.

Keywords: Dipicolinic acid, Blood coagulation, Fibrinolysis, Platelet aggregation, Natto

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