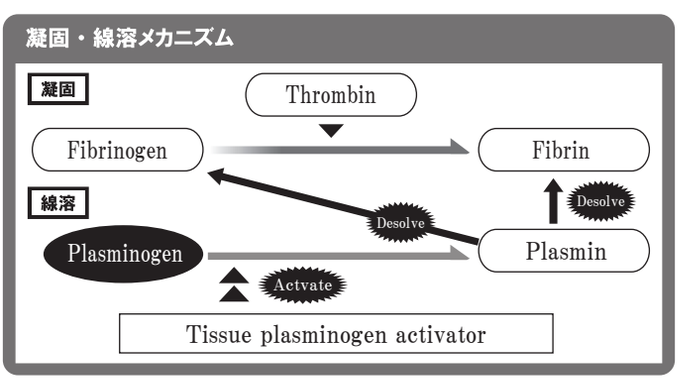
Clinical Investigations of the Thrombolytic Action of Earthworm Powder for Human.

○*Toshinori Watanabe,[1)] Akira Hikita,[1)] Minako Suga,[2)] Yusuke Yamashita,[2)] Yuji Maru,[2)] Shinnosuke Wakimoto[1)]*

1)Waki Pharmaceutical Co., Ltd. ,2)Pharma Foods International Co., Ltd.

As western eating habits spread around the world, the number of patients with circulatory diseases such as heart disease and cerebrovascular disease is increasing. For that reason, prevention of thrombosis has become an urgent matter in advanced nations. Blood clots that cause the above mentioned diseases are originally dissolved by plasmin that usually exists as inactive form called plasminogen. When a blood clot is presented in the blood stream, plasminogen is activated by plasminogen activator (PA) and is converted to plasmin to break it down.

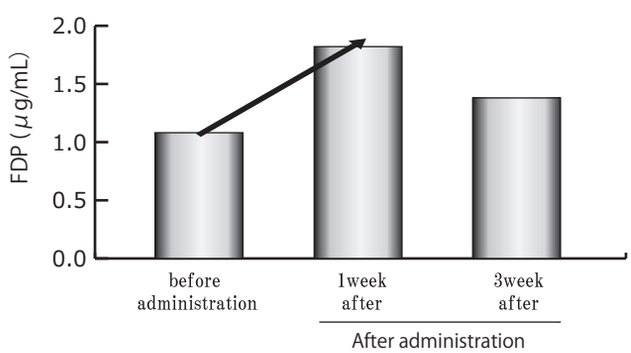


In recent years, protease called Lumbricus rubellus and Eisenia Fetida that induces fibrinolysis was found in earthworms. The protease derived from earthworm works not only as a traditional antithrombotic agent Urokinase, but also acts like plasmin that directly breaks down fibrin. For that account, earthworms have been used in health supplements and medicines in China and Korea. However, clinical research has rarely been conducted.

The purpose of this study is to investigate the effect of earthworm powder manufactured in Waki Pharmaceutical Co., Ltd. on human thrombolysis by conducting a human clinical trial.

First, activity of the earthworm powder was measured using its plasmin substrate and PA substrate. Then it was confirmed in vitro that the earthworm powder has plasmin activity and PA activity. Second, a clinical trial was performed on human subjects whose LDL cholesterol levels and neutral fat levels exceed the standard by using markers that indicate fibrin formation and resolution. The results showed that the earthworm powder inhibits fibrin formation and also accelerates degradation of fibrin. From this, it is assumed that the earthworm powder is useful for thrombosis in human.

Before and after the use of earthworm poeder（FDP）



Before and after the use of earthworm poeder（D-Dimer）