# *Direct thrombin inhibitors*

Clotting-Guide
vom Labor zur Diagnose

**Direct thrombin inhibitors:**
Direct anticoagulants block the coagulation cascade through direct effects on certain coagulation factors, in contrast to indirect anticoagulants, which inhibit coagulation via antithrombin or vitamin K metabolism.

Direct thrombin inhibitors block thrombin (factor IIa) and thus the lowest part of the coagulation cascade, from which important feedback loops originate: thrombin activates platelets, factors XI, VIII, V, and protein C as well as TAFI.

Parenteral thrombin inhibitors: Argatroban (Agratra®); Bivalirudin (Angiox®)

Oral thrombin inhibitors: Dabigatran (Pradaxa®)

**Reversal of direct thrombin inhibitors:**
In the case of life-threatening bleeding or acutely necessary surgical procedures, the effect of dabigatran can be immediately reversed by administering idarucizumab (Praxbind®). Argatroban and bivalirudin cannot be antagonized but have a very short half-life.

**Surveillance:**
Because of the short half-life of direct thrombin inhibitors, the effect on coagulation values depends on the time of the last administration or the end of an infusion. Shortly after ingestion (approx. 4 hours later) the effects are most pronounced, and a few hours later they become significantly less pronounced.

Direct thrombin inhibitors can affect both PT and APTT in unpredictable ways. The thrombin clotting time is very prolonged, and an exact level determination can be carried out using special analyzes (Hemoclot test = diluted thrombin time).

In case of questions please contact a coagulation specialist.

**References:**
Thomas L, Laboratory and Diagnosis, 2023, Release 5: https://www.labor-und-diagnose.de/index.html
Parameter catalog of the Clinical Institute for Laboratory Medicine, Med.Univ.Wien and AKH Vienna: https://www.akhwien.at/default.aspx?pid=3982
List of services for clinical chemistry, Univ.Klinikum Ulm: https://www.uniklinik-ulm.de/zentrale-einrichtung-klinische-chemie/leistungskatalog.html