



DOAC-Stop

Research Use Only. Not for use in diagnostic procedures.

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What is DOAC-Stop?

- It's a sample pre-treatment
- DOAC-Stop is the first general agent to remove DOACs (Direct Oral Anticoagulants) from plasma, for simplified testing
- DOAC-Stop efficiently removes all types of DOACs (Direct Oral Anticoagulants) including dabigatran, apixaban, rivaroxaban and edoxaban, from test plasmas with minimal effect on currently-known clotting variables

How does it work?

- Adsorbent product (proprietary composition based on activated charcoal) that extracts DOACs from plasmas
- Simple procedure: add one mini-tablet per 1ml test plasma (volume is not critical)
- Mix for 5 minutes and centrifuge down the adsorbent.
- The resulting plasma is then depleted of DOACs
- Yields similar APTT, dRVVT, PT(INR) and other results as if DOACs had not been present.

Tips

- ▶ Mix with test plasmas for 5 minutes after the mini-tablet has fully dispersed, NOT from the time of its addition
- ▶ A longer incubation time could be used if not fully dispersed within 5 minutes, although studies show still effective.

DOAC-Stop Applications

- ▶ Plasmas treated with DOAC-Stop can be used for reliable routine assessment of known blood coagulation parameters.
- ▶ The degree of shortening induced by DOAC-Stop in a clotting time test depends on the concentration and type of DOAC as well as the on the underlying plasma itself.
- ▶ Clotting time results with DOAC sensitive tests such as dRVVT and APTT tests, may be expressed as ratios of test result before to that obtained after DOAC Stop treatment. This ratio ranges upward from 1.0 and correlates positively with DOAC concentration depending on which DOAC and test is used.
- ▶ This “Correction Ratio” where the clotting test result before sample treatment by DOAC-Stop is divided by the clotting test results after treatment by DOAC-Stop, may be useful with high phospholipid dRVVT reagents

How much does it remove?

- DOAC-Stop absorbs up to an estimated 2,000ng/ml of any DOAC in less than 5 minutes.
- Leaves no residual effect

What About Heparin and Warfarin?

- There is negligible interference with vitamin K antagonist or heparinoid anticoagulants.

Works On	May Work	Doesn't Work
Dabigatran	Hirudin*	Heparin
Apixaban	Bivalirudin*	Warfarin
Rivaroxaban	Lepirudin*	
Edoxaban	Argatroban*	

*Bivalirudin is similar to hirudin and lepirudin, and probably would be extracted by DOAC-Stop from plasmas, although more slowly than DOACs, being of higher MW. DOAC-Stop may also bind argatroban and hirudin-type anticoagulants, but studies need done

What about other proteins?

- Specificity for removing DOACs is at least partly due to molecular size.
- Practically all proteins, clotting factors and inhibitors of physiological origin affecting coagulation tests have molecular size above approximately **30,000**.
- The adsorbing agent in DOAC Stop has a pore capacity of approximately 5000
- Therefore, activated charcoal-based product extracts DOACs efficiently with no effect on heparin-type anticoagulants.
- Each lab must validate the assay to ensure no DOAC-Stop binding of other proteins that could affect other assays

Packaging

- Each tablet or tube contains enough DOAC-Stop agent for processing 1ml of citrated test plasma (0.5-1.5ml is acceptable).
- Products are stable at ambient temperature for over 5 years if kept dry.

X9904-50	50 mini-tabs
X9904-100	100 mini-tabs

“Inhibitor Dots”

- ▶ Inhibitor “Dots” provide a pre-determined quantity of a coagulation inhibitor such as a DOAC or heparin
- ▶ on a plastic dipstick. They allow laboratories to prepare inhibitor samples at any concentration in any biological fluid for use in research, teaching or other purposes.
- ▶ DOAC-like substances are provided in 500ng quantities; heparin as 0.3IU, dried in a stabilizing and rapidly soluble film on a narrow dispenser strip.
- ▶ Each inhibitor dot is colored for simple identification.
- ▶ The binding agents in the dots total 200ug and have insignificant effect on clotting or other tests when dispersed in 1ml of plasma or blood.
- ▶ Each Dot dissolves within 2 minutes after being immersed in a fluid.

In Conclusion

- ▶ Removal by extraction of DOACs by DOAC-Stop allows labs to perform clotting assays that are affected by the presence of DOACs
- ▶ It can be used for checking if DOACs are present in samples giving unexpectedly prolonged clotting test or abnormal chromogenic test results.
- ▶ Plasmas treated with DOAC-Stop can be used for valid factor assays.
- ▶ It can prevent false LAC positive results due to DOACs in testing for lupus anticoagulants in a plasma sample
- ▶ **Research use only in the U.S. and Canada**

Questions?

