

MEETING ABSTRACT

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# Thrombus formation is not pH-dependent

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## Background

Experimental data have suggested that gastric acid impairs clot formation and platelet aggregation, and stimulates fibrinolysis. Thus, changing gastric pH to  $\geq 6$  may ameliorate acute gastrointestinal bleedings. The aim of this study was to evaluate the impact of pH on clot formation and stability in an *ex vivo* thrombus model.

## Materials and methods

Venous blood from healthy subjects was perfused over denuded porcine aorta at 5 mL/min at a shear rate of  $212 \text{ sec}^{-1}$  for thrombus formation. To evaluate the impact of pH changes, a co-perfusion with different acidic solutions was performed. Clot stability was evaluated by incubation of the isolated thrombus with pH solutions or gastric juice for up to four hours. The fibrinolytic activity was assessed by measuring D-dimer concentrations in the supernatant media. Thrombus size was evaluated by measurement of D-dimer concentration of the plasmin-degraded thrombus.

## Results

Co-perfusion with different pH solutions did not affect thrombus size compared to control conditions. Clot incubation at pH 3, 5 or 7 for up to 4 h did not increase supernatant D-dimer concentrations. Incubation with gastric juice at pH 5 for 4 h significantly elevated supernatant D-dimer compared to pH 3 and pH 7 ( $0.09 \pm 0.00$  vs.  $3.53 \pm 4.90$  vs.  $0.14 \pm 0.12$  mg/dL).

## Conclusions

Clot formation is unaltered by concomitant changes in pH at low shear rate. Likewise, there is trivial if any effect of pH or gastric juice on thrombus stability, indicating that acute pharmacological modulation of gastric

pH might yield only little impact on thrombus formed on gastrointestinal ulcers.

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