

Comparison of Heparin-Induced Thrombocytopenia Antibody-Induced Platelet Aggregation in the Presence of Porcine and Bovine Heparin

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The Importance of Heparin



- Heparin: A blood anticoagulant which increases the activity of antithrombin
 - Naturally occurring glycosaminoglycan
 - Used to treat heart attack, stroke, pulmonary embolism, deep vein thrombosis, venous thromboembolism, etc.

This Experiment



- Porcine Heparin is the only FDA approved heparin
- Loss of 50% of Chinese pig herds due to African swine fever (Fareed)
- The potential of Bovine heparin
 - Bovine clinical trials until 2000 (Al-Hakim)
- Heparin Induced Thrombocytopenia
 - What is HIT?

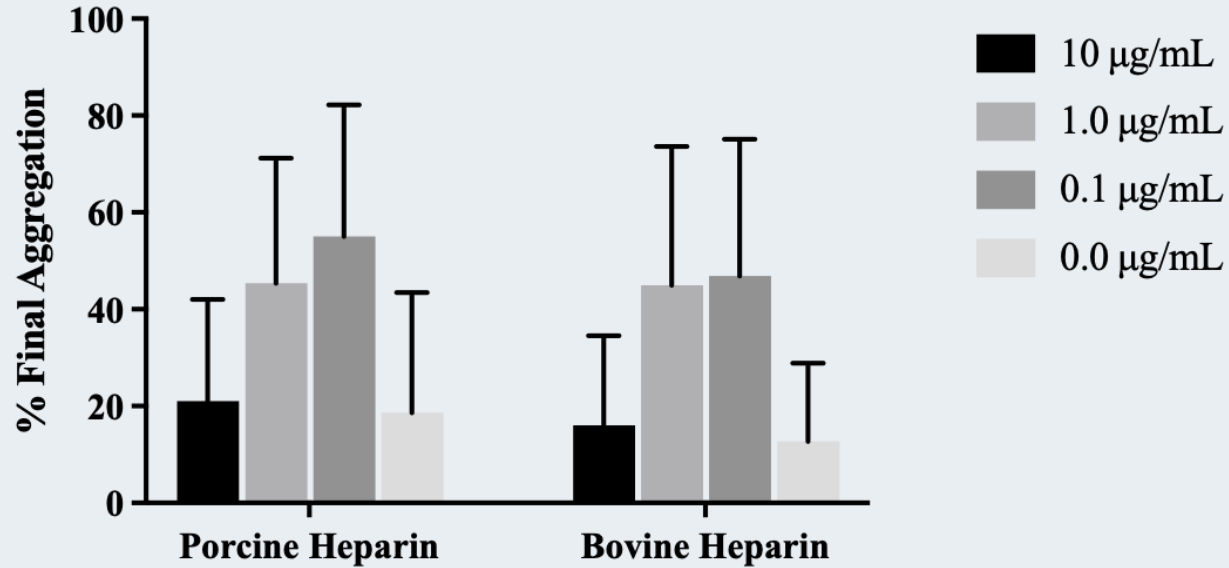
This present study will demonstrate the similarity in aggregating of Bovine heparin to Porcine heparin in HIT antibodies to prove Bovine heparin's ability to act as a substitute for Porcine heparin.

Methods

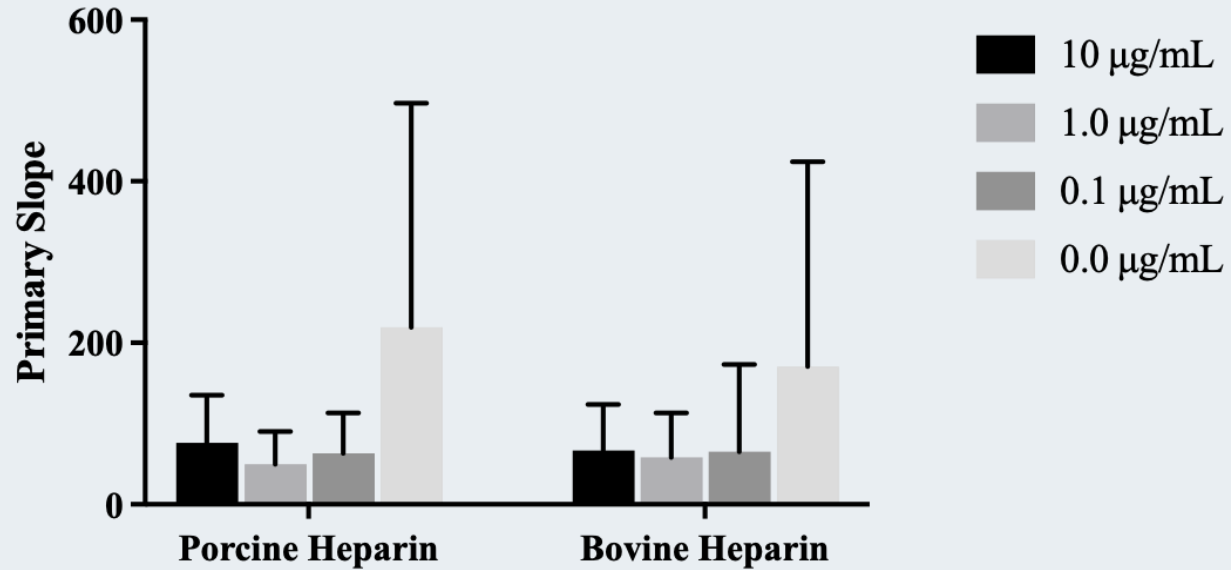


- PAP-8 machine
- Set up of incubation wells:
 - Machine 1:
 - 1- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 10 ug/mL Porcine heparin
 - 2- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 1 ug/mL Porcine heparin
 - 3- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 0.1 ug/mL Porcine heparin
 - 4- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 0 ug/mL Porcine heparin
 - Machine 2:
 - 1- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 10 ug/mL Bovine heparin
 - 2- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 1 ug/mL Bovine heparin
 - 3- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 0.1 ug/mL Bovine heparin
 - 4- 175 ug/mL PRP, 50 ug/mL HIT plasma, 25 ug/mL 0 ug/mL Bovine heparin

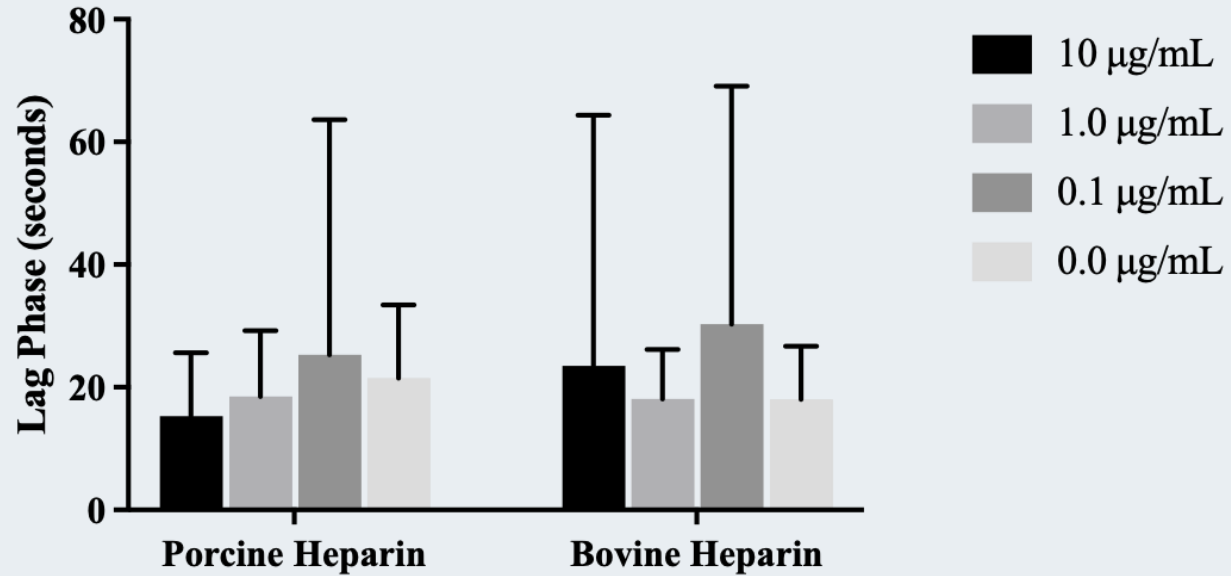
Results/Conclusions



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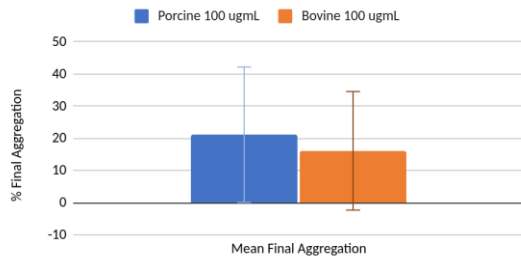
Results/Conclusions



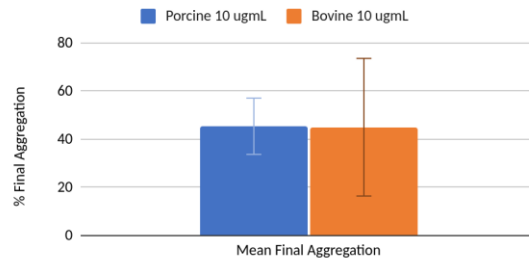
Results/Conclusions



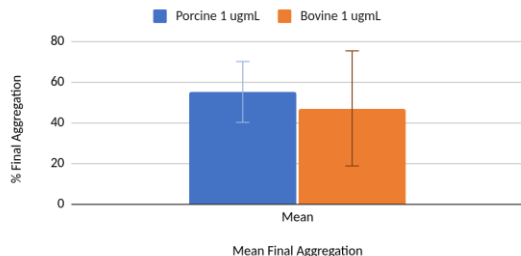
Porcine vs. Bovine Mean Final Aggregation at 100 ug/mL Concentration



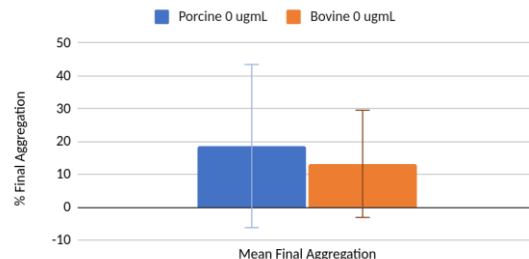
Porcine vs. Bovine Mean Final Aggregation at 10 ug/mL Concentration



Porcine vs. Bovine Mean Final Aggregation at 1 ug/mL Concentration



Porcine vs. Bovine Mean Final Aggregation at 0 ug/mL Concentration



Discussion



- What do these results mean?
- Potential error and how we fixed it
- Limitations
- Future directions
 - Ovine heparin (Kouta)
 - Synthetic heparin (Baytas)

Works Cited



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Thank you!