

## REVIEW

# Oral Heparins

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### SUMMARY

The antithrombotic drug heparin is administered parenterally and believed not effective orally. Oral heparin would be most suitable for long term administration, often required for the prevention of thrombosis. Following parenteral administration, heparin is taken up by endothelial cells. Our laboratory has shown that heparin is similarly taken up by endothelium following oral administration, despite low plasma heparin concentrations. In a twenty-four hour period, endothelial heparin concentrations are greatest within 15 minutes of oral dosing although plasma levels never exceed one percent of dose. Endothelial uptake accounts for a considerable amount of absorption if the total body endothelium is considered. In support of oral heparin absorption, we demonstrated a dose-dependent decrease in thrombosis incidence in a rat jugular vein model following single oral doses of unfractionated heparins (bovine and porcine) or low molecular weight heparins (reviparin, logiparin and ardeparin). Low molecular weight heparins were effective at lower doses than unfractionated heparins where a fifty percent reduction in thrombosis was observed with 0.025 mg/kg reviparin, 0.1 mg/kg logiparin, versus 7.5 mg/kg bovine unfractionated heparin. These studies support the work of others demonstrating measurable systemic changes following oral heparin administration and suggest that heparin may be effective when administered by the oral route. It also indicates that the presence of heparin in plasma likely reflects a much greater amount associated with endothelium. (Clin. Lab. 2002;48:111-116)