

**Lipocine's Hydroance™ Technology
Platform for the Oral Delivery of
Highly Soluble Drugs with Poor
Absorption Potential**

Hydroance™ Technology Platform

- **Unique lipidic compositions for the optimal presentation of absorption promoters and drug in concert to absorption sites**
- **Utilizing low doses of bioacceptable (Non NCE) materials**
- **Protected by several issued and pending patents, world-wide**
- **Conventional Manufacturing**

CASE STUDY 1

Model Compound

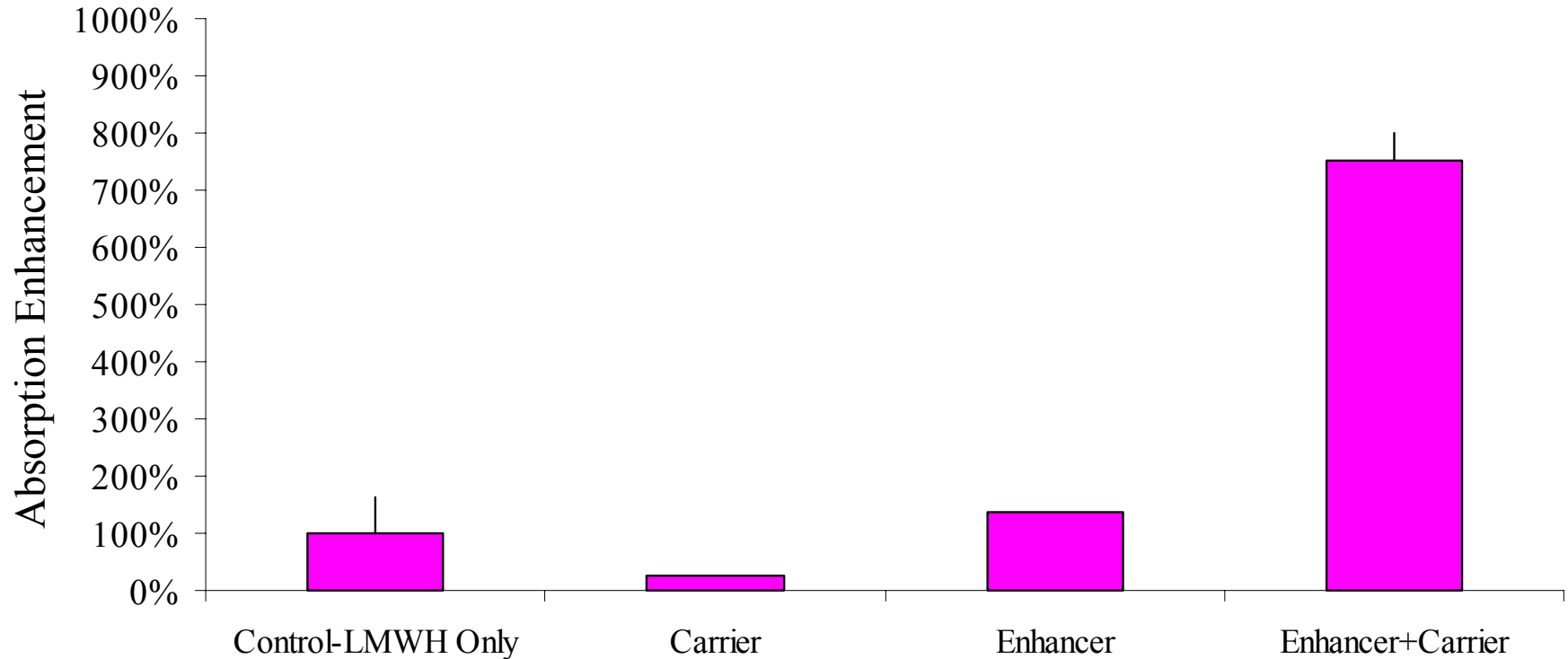
Low-Molecular Weight Heparin

- **Highly Ionized Macromolecular Drug**
- **Practically unabsorbed orally**

Marketed Product is Injectable

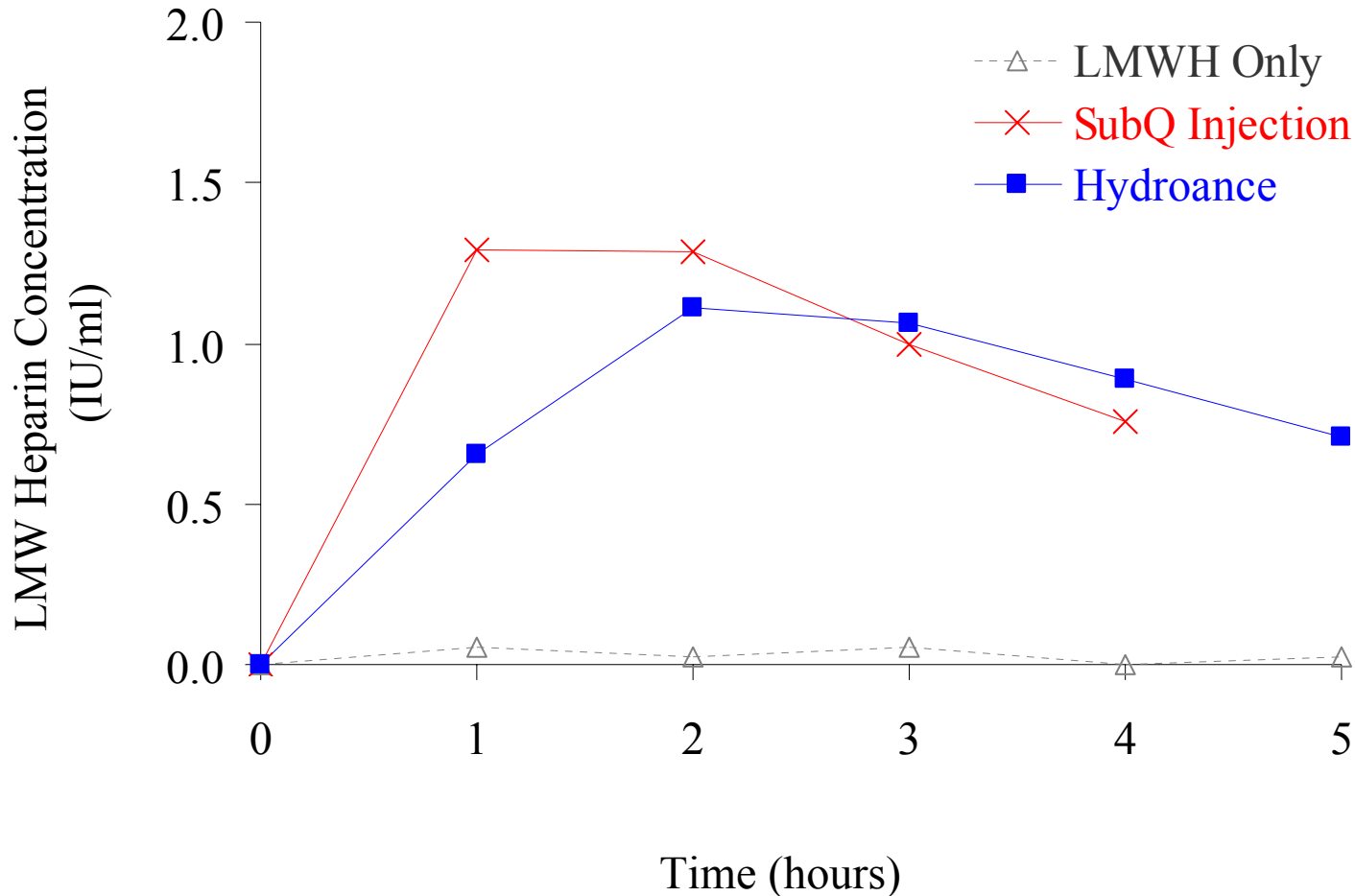
Hydroance Application: LMW Heparin

Effect of Hydroance™ Formula Components on LMW Heparin Plasma Levels from Intraduodenal Administration in Rats



Findings: *Synergistic LMWH absorption enhancement with Lipocine's combination of enhancer with a carrier.*

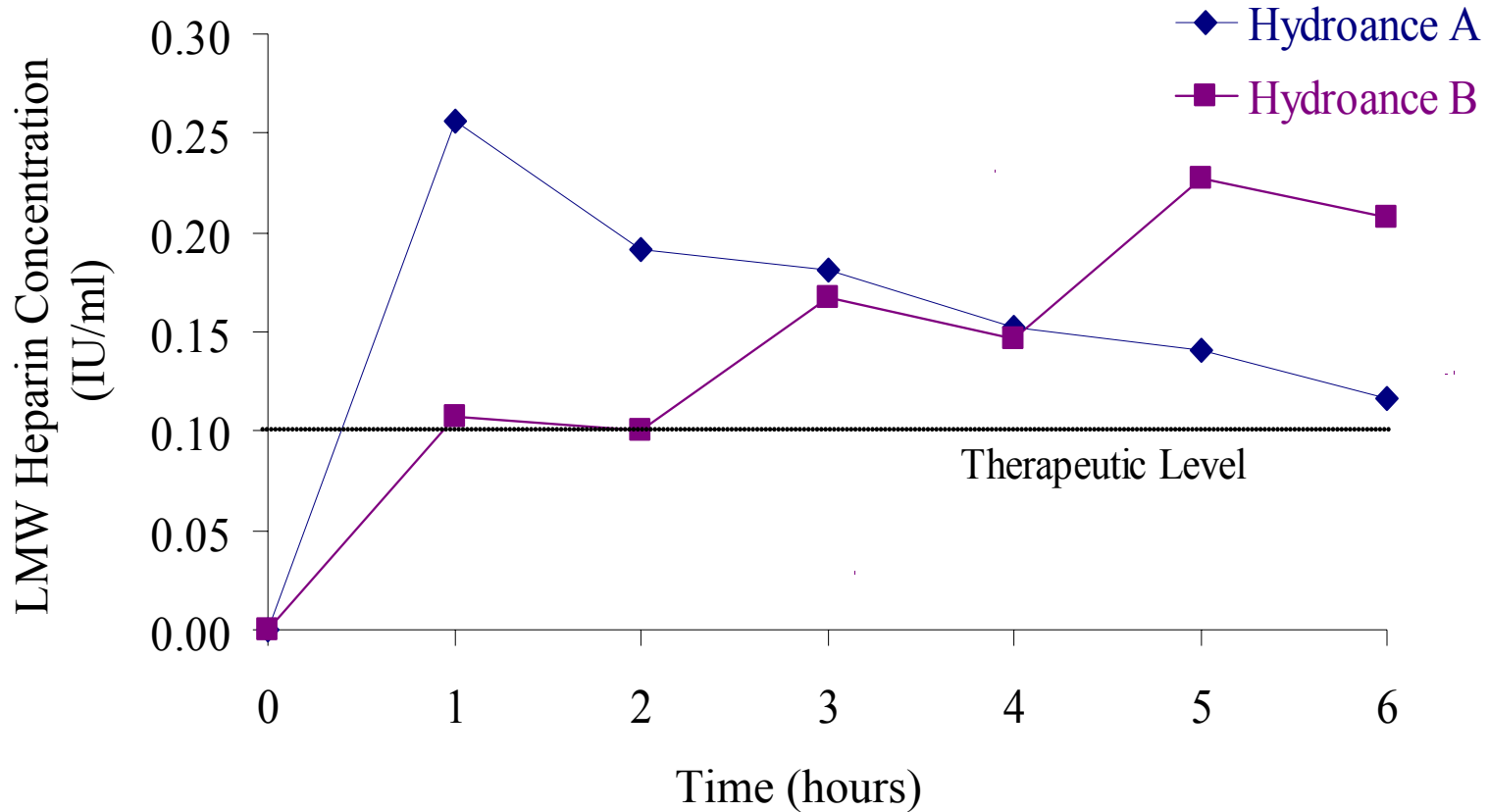
Absorption of LMW Heparin in Rats



Hydroance™ blood levels comparable to subcutaneous injection.



Oral Administration of LMW Heparin in Swine



Hydroance™ produces therapeutically relevant LMWH levels.



CASE STUDY 2

Model Compound

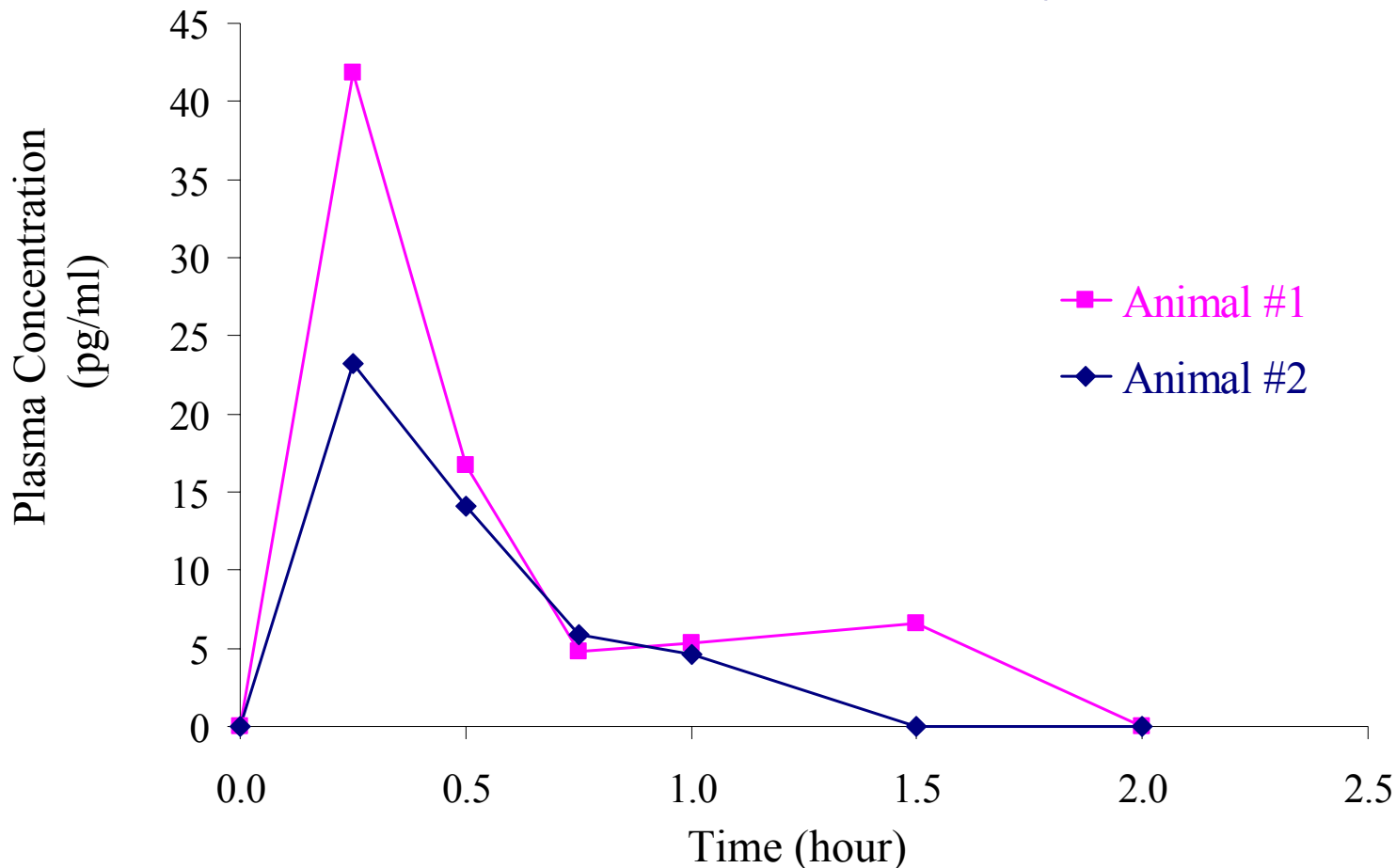
LCVN 5005

(Partner-Proprietary)

- Peptide
- ~3,500 molecular weight

Marketed product is injectable

Oral Administration of LCVN 5005 in Rhesus Monkeys



Hydroance™ enables oral delivery of proprietary peptide in a rhesus monkey model.



CASE STUDY 3

Model Compound

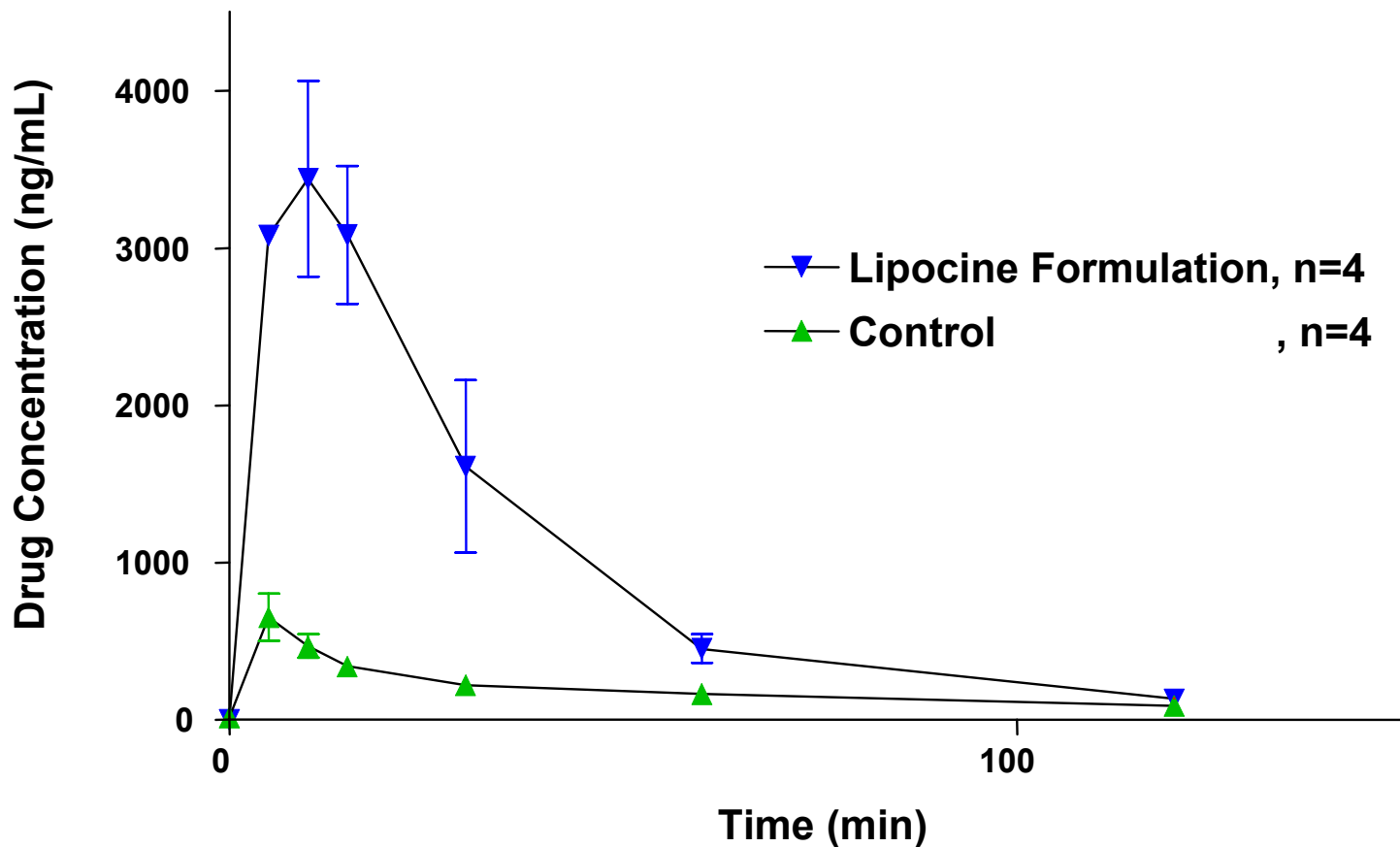
LPCN 6002

(Partner-Proprietary)

- Small, Ionizable Hydrophilic Drug
- Very High Aqueous Solubility

Target – Enable oral delivery

Plasma Concentration of LPCN 6002 Following Intraduodenal Administration



Uniqueness of Lipocine Technology

- **Very Strong Proprietary Position**
 - **Technology Platform Patents**
 - **Product Specific Patents**
 - **Additional Firewall Patents**
- **Breakthrough Technologies**
 - **Clinically Validated**
 - **Superior to Competing Technologies**
 - **Conventional Manufacturing Techniques**
 - **“Bioacceptable” Excipients**

What Lipocine Can Do For You

- **Develop Proprietary Products with Improved Safety/Efficacy/Compliance**
- **Enable Product/Brand Life Cycle Management Beyond Compound Patent**
- **Discovery/Development Support for NCE –Identify “Winners” and Shelve “Losers”**