

Flunixin Residues in Cattle – why?

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Flunixin Residues in Dairy Cows

Question:

Why do dairy cows account for ~ 76% of flunixin positive residues of all cattle at slaughter?

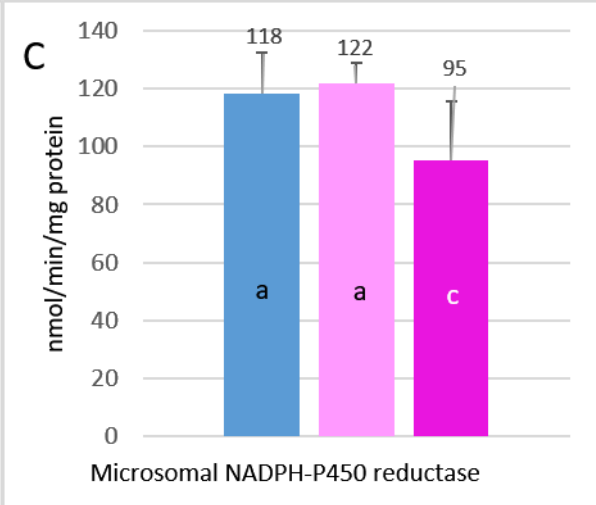
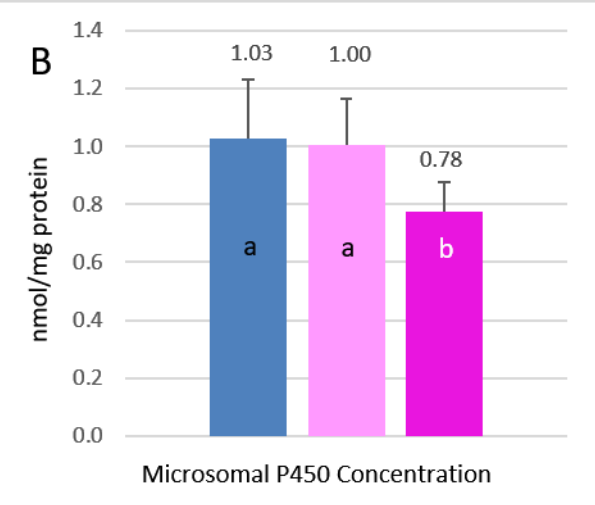
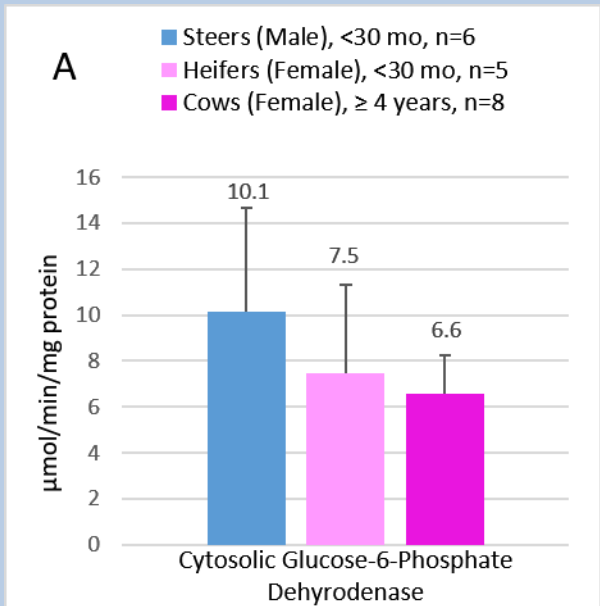
- Age related?
- Gender related?
- Illness related? lowered rates of flunixin metabolism resulting in higher residues?

Approach:

Liver subcellular fractions prepared at slaughter (microsomes, S9, and cytosol)

From **steers** & **heifers** (< 30 mos), and **cull dairy cows** (> 48 mos)

- Glucose 6-P Dehydrogenase activity
- P450 concentration
- Cytochrome C reductase activity
- Rate of flunixin metabolism
- Identification of major FNX metabolites, by subcellular fraction



Findings

	Steer or Heifer	Cows
• Glucose 6-P Dehydrogenase activity (cytosol)	=	=
• P450	=	22-24% ↓
• Cytochrome C reductase activity	=	20-22% ↓
• Rate of flunixin metabolism	=	40-49% ↓
• Identification of major metabolites (no measured metabolism in cytosol)	5'OH FNX	5'OH FNX

First to identify microsomes as site of metabolism site in liver.

Findings indicate age may be a factor in higher flunixin residues in dairy cull cows

Study in Progress:

Comparing Cytochrome P450 Reductase Activity (CPR) and Flunixin Metabolism in Liver Microsomes Prepared from Dairy Cows

KIS - and KIS +(antibiotic positive)
FNX + cows have typically been KIS +

Hypothesis:

KIS + animals may have lower CPR activity and rate of FNX due to illness (indicated by presence of antibiotic)

Preliminary Findings:

1 of 20 KIS - cows 0.6 ng/g liver FNX (Tolerance 125 ng/g or ppb)

4 of 20 KIS + cows 1.9 – 9.5 ng/g liver FNX

Confirmation that KIS + identification is useful as a sentinel for flunixin residues

CPR activity appears to be lower in KIS +

