



PERFECT SOLUTIONS  
Calcium and energy supplements  
for fresh cows



# Clinical milkfever– only tip of the iceberg

**Clinical milkfever**

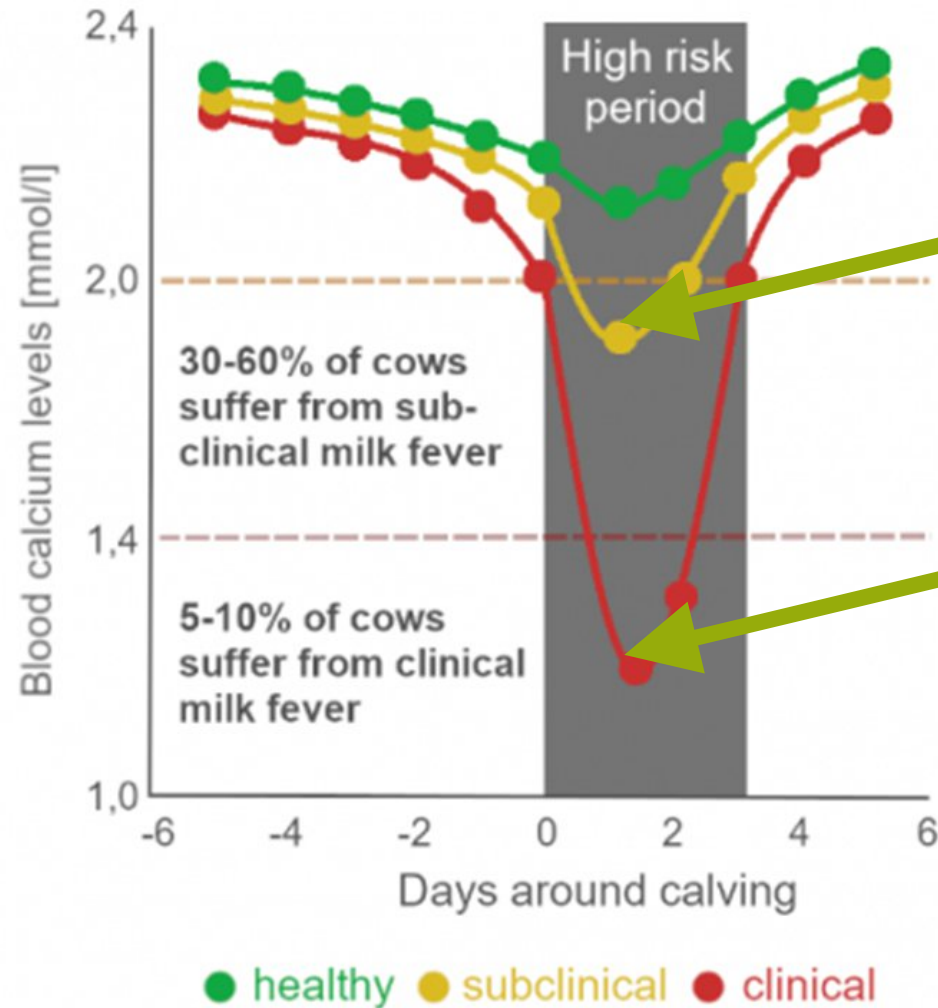
**5-10 % of all  
dairy cows**

**Subclinical milkfever**

Large unknown costs in many  
herds

**50 % of all  
dairy cows**

# Milk Fever is caused by low calcium in the blood



Cows are looking "tired", are not eating enough and show less activity. Difficult to spot!

Cows are really slow or not able to get up. Critical cases with cold ears and spine should be treated with IV!

< 2 mmol/L (or < 8.0 mg per dl) ☾ Subclinical milk fever



# Consequences of calcium deficiency



**Calcium deficiency**



**Muscle function**



**Contractions in rumen and the intestinal system**



**Feed intake**



**Energy balance**



**Risk of ketosis**



**Risk of fatty liver**



**Reproduction**



**Risk of displaced abomasum**



**Milk yield**



**Retained placenta**

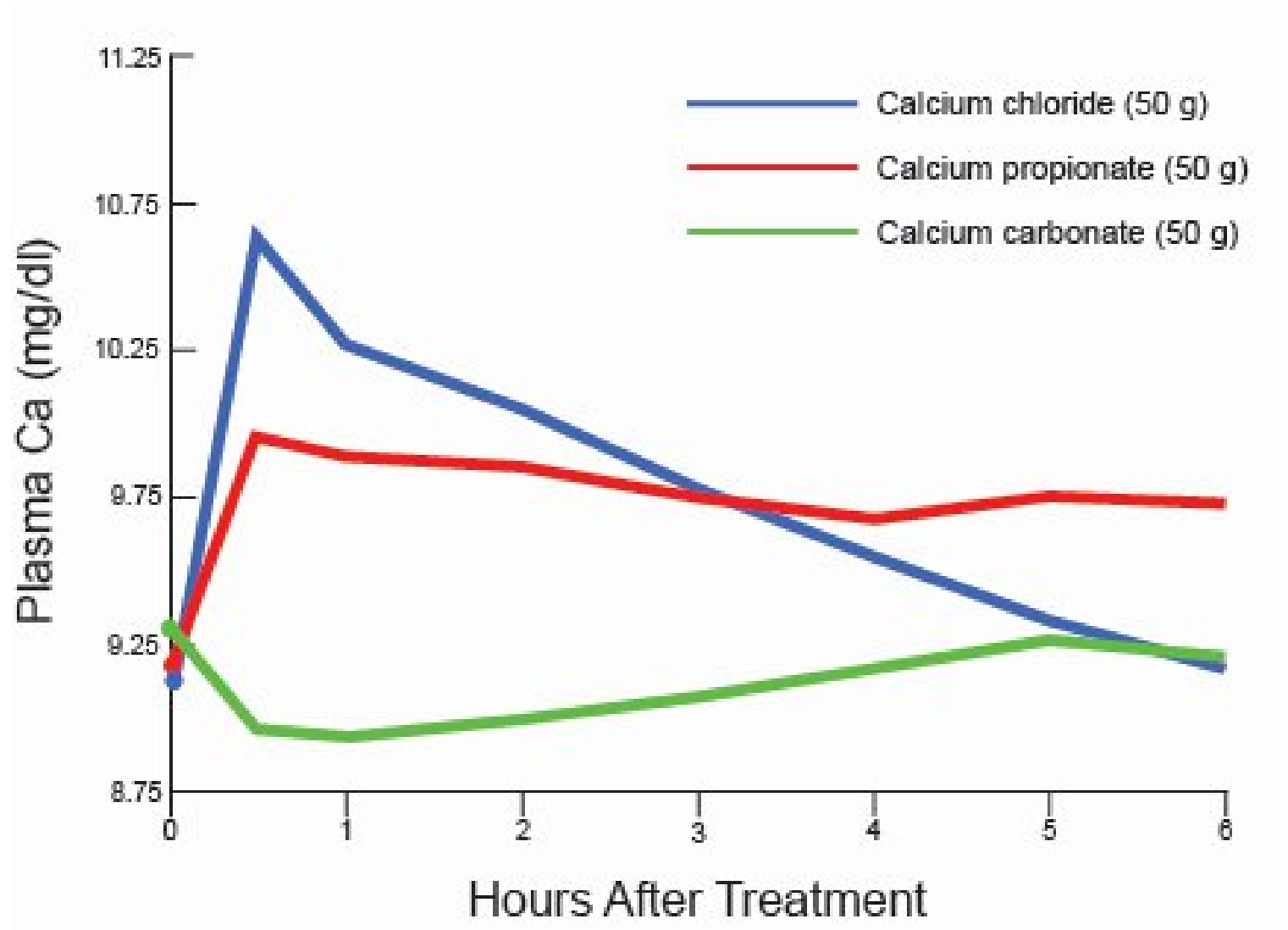


**Cows with subclinical milk fever has:**

- 9 x risk of getting ketosis
- 6 x risk of calving difficulties
- 4 x risk of left displaced abomasum
- 4 x risk of retained placenta



# Effect on Plasma Ca from calcium sources



Reference: 1993. J.P Goff & R.L. Horst. "Oral Administration of Calcium Salts for Treatment of Hypocalcaemia in Cattle" USDA Agriculture Research Service.



# Sources of Calcium and their solubility

Ca can be absorbed across the cattle rumen epithelium.

- Ca absorption appears to be key factor at the onset of lactation to reduce incidence of Milk fever.
- Providing highly soluble sources of oral Ca induces high concentrations of ionized Ca in the gastro-intestinal lumen, for rapidly increase of Ca concentration in blood.
- Calcium chloride and calcium propionate has a high solubility rate compared to other Ca sources and are also rapidly being absorbed to help reducing risk of Milk fever

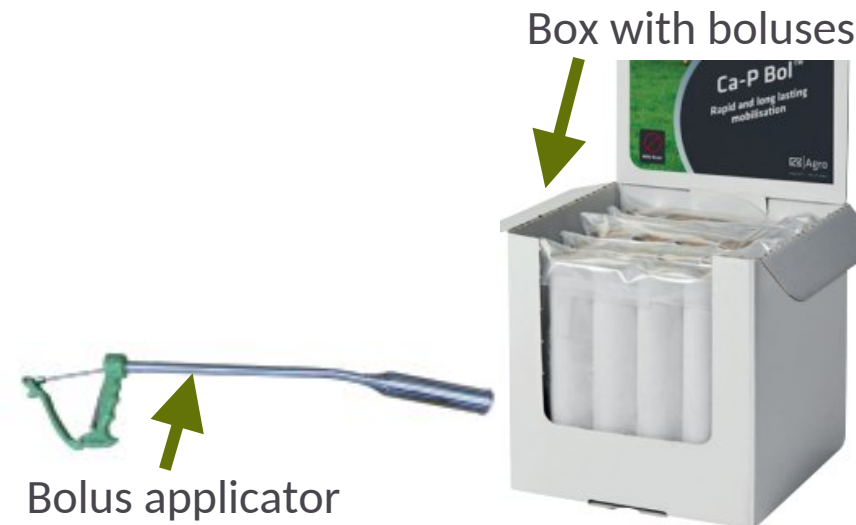
Source: Zhang et al. 2020

Calcium sources used in animal feed	Solubility in cold water (g/100 ml water)	Solubility in hot water (g/100 ml water)
Calcium chloride	600	159100
Calcium propionate	49	55
Calcium acetate	34.7	29.7
Calcium formiate	16.1	18.4
Calcium lactate	4.8	7.9
Calcium gluconate	3.3	4.4
Calcium dihydrogen phosphate (monohydrate)	1.83	3.25
Calcium sulphate	0.213	0.161
Calcium citrate	0.085	0.095
Calcium phosphate	0.0225	0.075
Calcium carbonate	0.0014	0.0020



# Ca-P Bolus - Introduction

- Bolus of 165 grams for prevention of milkfever/hypocalcemia
- Administration for cows around calving
- Dissolves in the rumen after 25 minutes
  - Each bolus adds 40 grams calcium and 6.7 grams phosphorus including a little magnesium
- Contains fast dissolving calcium sources to increase blood calcium
  - Made from calcium chloride and calcium propionate
- Sold as bags with four boluses to customers



# Calcium Balance - Introduction

- Drench of calcium for prevention of milkfever/hypocalcemia
- Administration for cows around calving
- Dose of 225 ml with drench gun
  - Each dose adds 35 grams calcium including a little magnesium
- Contains fast dissolving calcium sources to increase blood calcium
  - Made from calcium chloride and calcium propionate
- Sold as 5-liter canisters  
(22 doses in one canister)



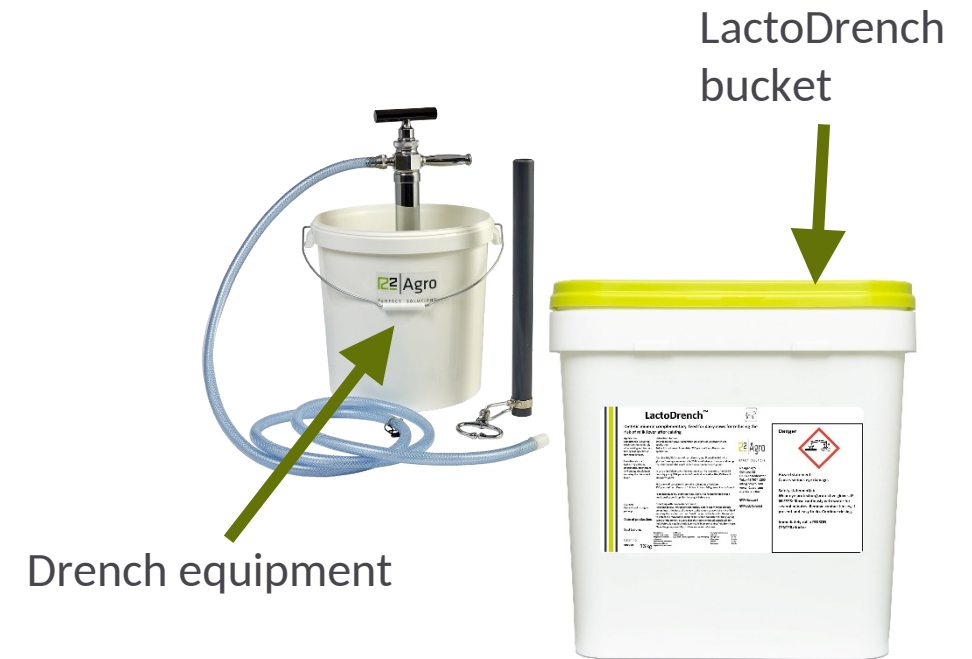
5-liter canister





# LactoDrench - Introduction

- Drench mixture for cows after calving to avoid complications or in stressful periods
- Administration immediately after calving or at stressful periods
- Supplies both calcium, phosphorus, rumen buffer, energy and electrolytes
  - Calcium source is calcium propionate
- Dosing for cows:
  - 1. og 2. lactation cows: 500 grams
  - 3. and more lactations : 750 grams
  - Mixed into 20 liter luke warm water and drenched into the cow.
- Sold in 13 kg buckets



# EnergyCal - Introduction

- Mixture for cows after calving to supply calcium and easily-absorbable energy right after calving
- Administration immediately after calving when the cow is standing for voluntary drinking
  - Cows have a high appetite for this product and will stimulate water intake.
- Supplies both calcium, phosphorus, energy and electrolytes
  - 41g Calcium/kg EnergyCal – from calcium propionate, calcium lactate, Dicalcium phosphate and calcium carbonate
- Dosing of 0.5-1.0 kg of EnergyCal mixed into 15 liter luke warm water.  
Serve additional 15 liters of clean after
- Sold in 10 kg buckets



EnergyCal  
bucket



# Calcium and energy products for fresh cows

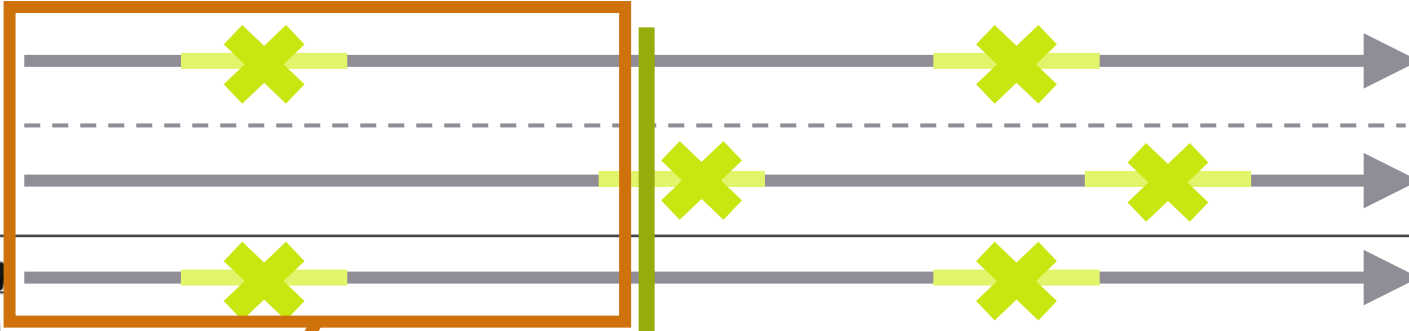
Product	Ca-P Bolus	CalciumBalance	LactoDrench	EnergyCal
One Dose equal to*	1 bolus, 165g	225 ml	500 - 750 g	0,5 - 1 kg
Calcium (g) per dose*	40 g	35 g	66 - 100 g	20 - 40 g
Phosphor (g) per dose	6,7 g	-	6 - 10 g	5 - 10 g
Calcium sources	Calcium Chloride, Calcium propionate, Monocalcium phosphate	Calcium Chloride, Calcium propionate	Calcium propionate	Calcium lactate, Calcium propionate, Dicalcium phosphate, calcium carbonate
Other minerals	Magnesium	Magnesium, Selenium	Sodium, Phosphor, Magnesium, Chloride, Potassium	Sodium, Phosphor, Magnesium, Chloride, Potassium
Extra energy	A little from propionate	Yes, from propionate and propylenglycol	Yes, from propionate	Yes, from dextrose, lactose, lactate and propionate
Other benefits		Niacin (Lipid metabolism)	Rumen buffer	
Injection method	Bolus applicator	Drench gun	Drench pump	Voluntary drinking
Product strength	Secure administration of rapid absorbable calcium	Rapid absorbable calcium and energy in same dose	Total solution with calcium, minerals, electrolytes and water	Total solution with energy, calcium, minerals, electrolytes and water with no drenching required

\*According to EU-regulation on dietetic feed a minimum of 50g of easily absorbable calcium must be administered to be accepted as a preventative treatment against milk fever.



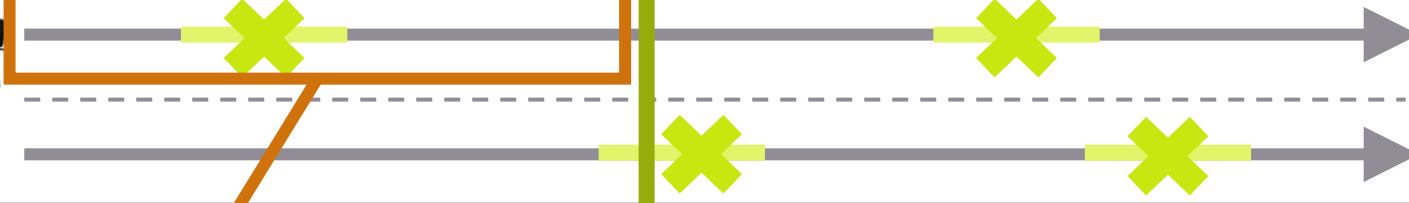
# How to apply products against milk fever for cows

Ca-P  
Bolus



1. bolus 12-24 hours before calving  
+ 2. bolus 24 hours after calving  
or  
1. bolus immediately after calving  
+ 2. bolus 10-14 hours after calving

Calcium  
Balance



1. dose 12-24 hours before calving  
+ 2. dose 24 hours after calving  
or  
1. dose immediately after calving +  
2. dose 10-14 hours after calving

Lacto  
Drench



Drenching after calving

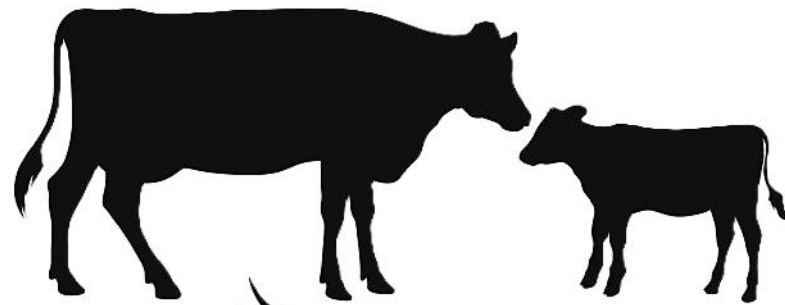
EnergyCal



Administration immediately after calving when the cow is standing.  
Remember to provide additional clean water after EnergyCal.

POINT OF CALVING

Administration app. 12-24  
hours before calving is good  
for older/high risk cows



Supplementation of EnergyCal  
or LactoDrench can be combined  
with one dose of Ca-P bolus or  
CalciumBalance