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ReaShure-XC Precision Release Choline

**The Next Generation Choline for
Transition Cows**

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Choline is an essential nutrient.

ReaShure®-XC *Precision Release Choline* is **rumen protected to effectively deliver that choline**, ensuring a powerful launch to each lactation, to **optimize peak milk** and maximize productivity.

ReaShure **supports cow health during the challenging transition period**, delivering a proven reduction in metabolic disorders, including ketosis, displaced abomasum and subclinical milk fever. Research shows choline also **improves colostrum quality and provides other benefits to the *in-utero* calf**, impacting health and growth after birth.



Outline

- Introducing ReaShure-XC *Precision Release Choline*
- Benefits:
 - Increased Milk Production
 - Cow Health – Reduced Metabolic Disorders
 - Calf Health & Growth
- ROI

Balchem Solution



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Perfect Marriage

Superior Encapsulation Technology

- Balchem's coating expertise
 - Superior feed stability
 - Excellent rumen protection
 - Intestinal release

Decades of proven on-farm and peer-reviewed animal performance research available

Superior Core Dynamics

- Pure choline chloride crystal core
- Consistent particle size & geometry



What is ReaShure-XC?

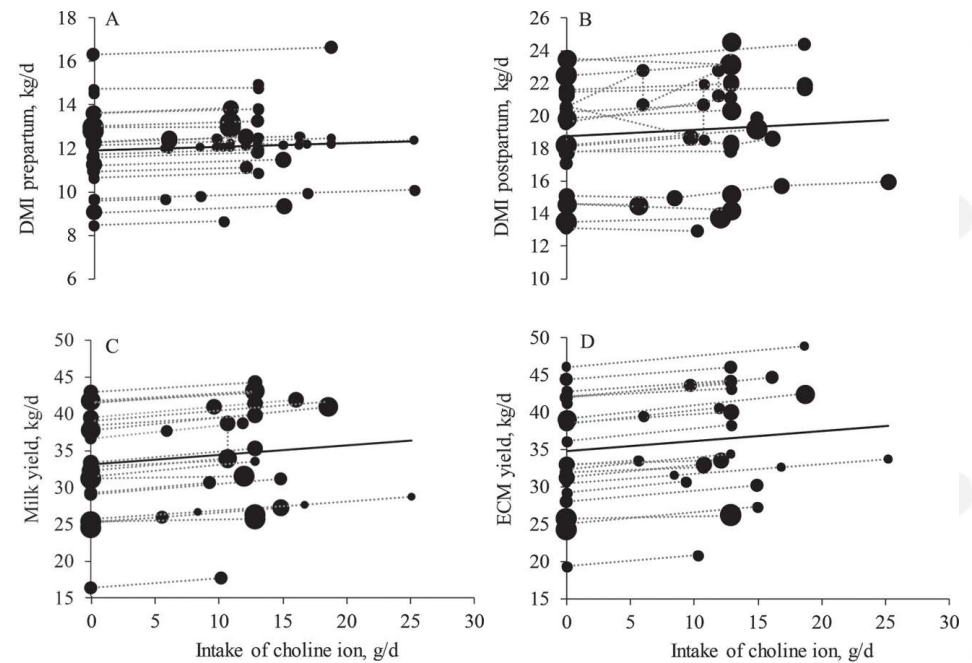
60% choline chloride concentration (2x)

- 30 g/d/feeding rate
- EU manufacturing
- Non-GMO
- Takes up less ration space
- Improved handling
- Less inventory & floor space
- Reduced carbon footprint/improved sustainability
 - § Lower transportation emissions (and costs)



Expected Results – Meta-analysis

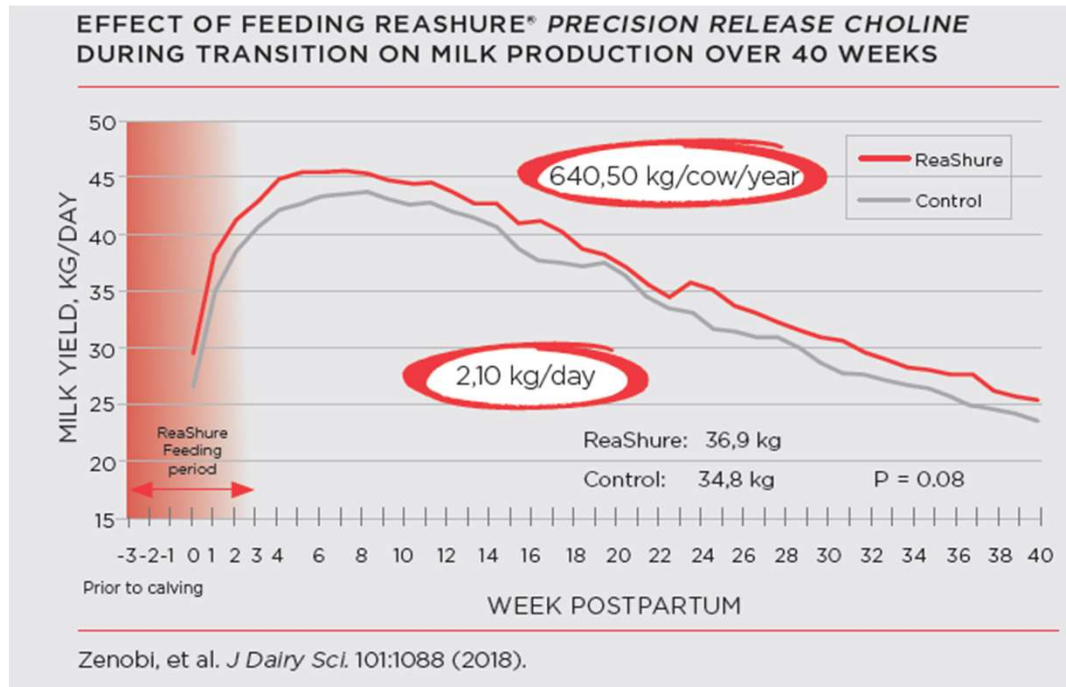
- Significant increase in DMI pre-partum
- Significant increase in DMI post-partum
- Significant increase in milk yield
- Significant increase in ECM
- Regardless starting milk production, RPC has been proven to consistently increase milk and ECM production



Arshad et al., 2019

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Full Lactation Increased Milk Production



- Limited feeding period (42 days)
- Results on the whole lactation
 - +2,10 kg milk/cow/day
 - 640,50 kg milk/cow for the entire lactation

Expected ROI

THE VALUE OF AN EXTRA 640,50 kg OF MILK/COW

Additional Milk/Cow/Year	Milk Price €/kg	Additional Annual Income (100 cows)
640,50 kg ¹	€ 0,35 ²	€ 22.418
	€ 0,29 ³	€ 18.575
	€ 0,58 ⁴	€ 37.149

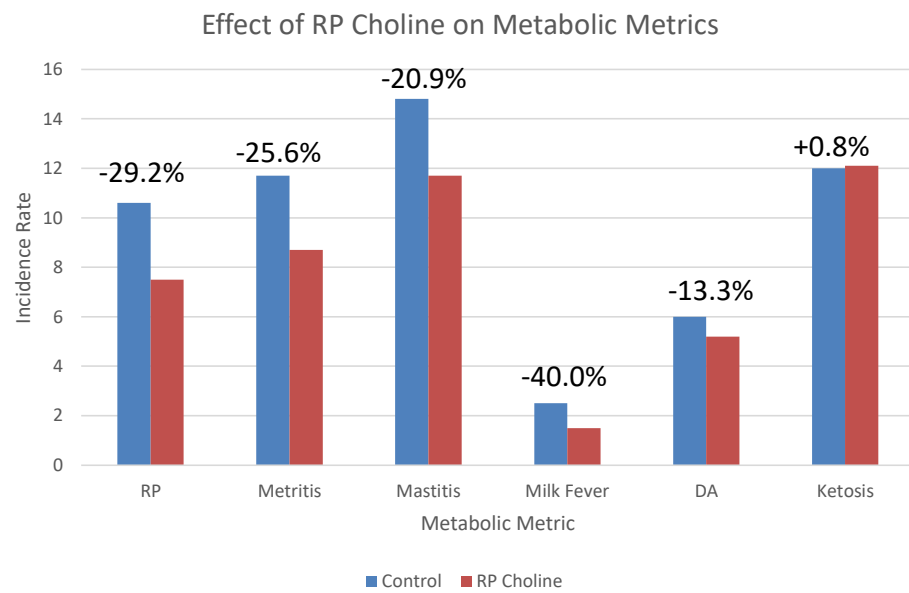
¹Zenobi, et al. *J Dairy Sci.* 101:1088-1110 (2018).

²2019 Average Milk Price EU-28

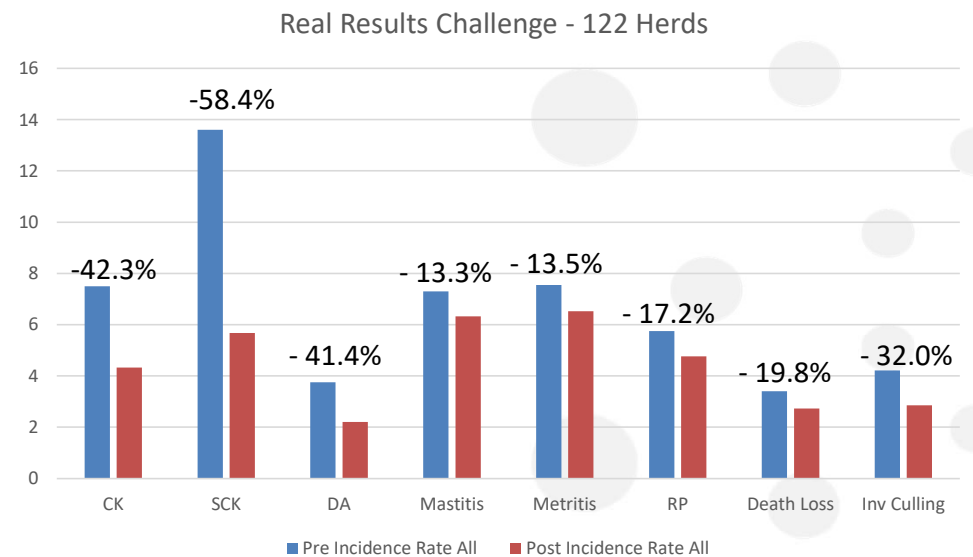
³2019 Lowest Milk Price EU-28

⁴2019 Highest Milk Price EU-28

Reduced Metabolic Disorders



Arshad et al., 2020



Balchem Field Data

Expected ROI

ECONOMIC IMPACT OF REDUCED METABOLIC DISORDERS

Disease	Incidence Rate % ⁴	Cost €/Case	Cost €/100 Cows	% Reduction ⁴	Savings €/100 Cows
Mastitis	22.5	236 ¹	5.310	34.7	1.843
Metritis	8.9	225 ¹	2.003	16.6	332
Retained Placenta	9.4	162 ¹	1.523	11.5	175
LDA	4.2	321 ¹	1.348	48.5	654
Clinical Ketosis	9.6	145 ¹	1.392	55.7	775
Subclinical Ketosis	23.3	101 ²	2.353	50.5	1.188
Clinical Milk Fever	3.0	213 ¹	639	32.0	205
Subclinical Milk Fever	45.0	112 ³	5.040	32.0	1.613
Total					€ 6.785

¹Liang, et al. *J Dairy Sci.* 100:1472-1486 (2017).

²Mostert, et al. *Animal*, 12(1), 145-154 (2018).

³Guard, C., *CVC Kansas City Proceedings* (2009).

⁴Lima, et al. *The Veterinary Journal.* 193:140-145 (2012). Incidence rates and percent reductions in diseases are calculated as the averages observed in Lima et al.

Average results reported by producers from 112 herds, representing 226.630 cows that participated in the ReaShure Real Results program. Conversion to € is based on 2019 average exchange rate €/USD.

Calf Health & Growth

IN UTERO EFFECT OF PREPARTUM FEEDING REASHURE® PRECISION RELEASE CHOLINE TO DAMS ON GROWTH OF THEIR HEIFER CALVES

Age	Control	ReaShure
Birth, kg	40,4	38,3*
2 months (weaning), kg	76,7	77,6
12 months, kg	322,2	335,3**
Post-calving, kg	534,0	570,0**

36 kg heavier
at 1st calving

*Effect of ReaShure, $P < 0.10$.

**Effect of ReaShure, $P < 0.05$.

Expected ROI

THE VALUE OF A HEAVIER HEIFER AT FIRST CALVING¹

Additional Body Weight at First Calving	Additional Milk/Year	Milk Price €/kg	Additional Milk Income/Year From 1st Lactation Animals (35) <i>(100 cow herd x 35% heifers=35 heifers)</i>
36 kg ²	455 kg	€ 0,35 ³	€ 5.574
		€ 0,29 ⁴	€ 4.618
		€ 0,58 ⁵	€ 9.237

¹Staley, Gavin. "Why Heifer Maturity Matters: The Peter Pan Problem." *Progressive Dairy*. 11 March 2020, 53-55.

²Zenobi, et al. *J Dairy Sci*. 101:1088-1110 (2018).

³2019 Average Milk Price EU-28

⁴2019 Lowest Milk Price EU-28

⁵2019 Highest Milk Price EU-28

Overall Economic Returns

REASHURE ECONOMICS (100 COWS)

Benefit	Investment ¹	Income & Savings	ROI
Full Lactation Milk Production	€ 1.500	€ 22.418 ²	15:1
Reduced Metabolic Disorders		€ 6.785	4,5:1
Improved Calf Health & Growth		€ 5.574 ²	4:1
Total		€ 34.777	23:1

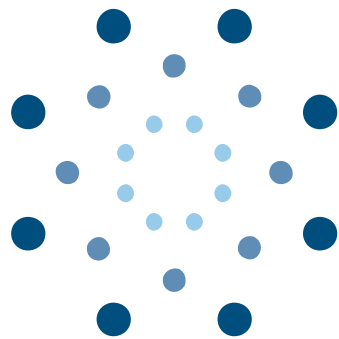
¹30 grams of ReaShure-XC 21 days pre- and 21 days post-parturition.

²Milk Price € 0,35/kg.

Two decades of peer-reviewed research has demonstrated that cows respond in multiple ways to supplemental choline in their diets. Though not every cow responds the same, research proves that delivering choline during transition leads to substantial return from a small investment.

No product is more extensively researched than ReaShure – 20 years!

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Solve Today. Shape Tomorrow.

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