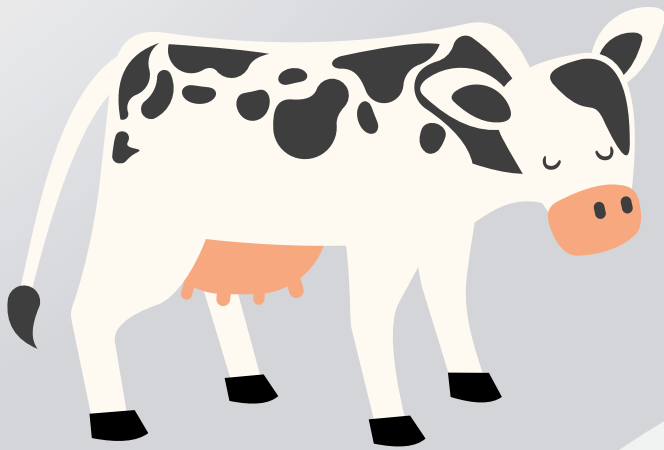


FORMULATING RUMINANT HEALTH





KEMIN'S FORMULATING RUMINANT HEALTH PROGRAMME

Ruminant health is the cornerstone of profitable animal agriculture. In ruminant health, the transition phase is the most important one, as it brings new lactation and sets a tone for the whole lactation yield. The phase brings opportunities, but also challenges if it is not managed well. With our Formulating Ruminant Health Programme, these challenges are turned into opportunities. This Programme combines the best Choline product with the right technical expertise and support.

NEED OF TRANSITION COW HEALTH FORMULATION

One of the key challenges during the transition phase is that a significant amount of unutilized fat accumulates in the liver and consequently cuts into the profit margins.

- ✓ A research survey (Journal of Dairy Science, 2013) examined 5884 cows from 10 European countries. It shows that in Europe, subclinical ketosis ranges from 11 to 36% at farm level. This correlates with leakage in farmers' profits. Ketosis is also linked with other metabolic disorders such as RP (= Retained Placenta) which also increases economic losses
- ✓ Research shows that 50 - 60% of transition cows experience moderate to severe fatty liver (Bobe et al., 2004)
- ✓ Daily fatty acid uptake by the liver increases 13-fold at calving, from 100 g per day to 1,300 g per day (Reynolds et al., 2003)
- ✓ Drackely (2001) estimated that during the peak blood NEFA concentration, approximately 600 g fat is deposited in 24 hours, which corresponds to an increase in liver fat of 6 - 7% by weight

THE SPECIFIC ROLE OF NUTRITION IN RUMINANT HEALTH

In terms of health solutions, Choline nutrition has received the highest focus due to its role in better liver function during transition phase management and early lactation. Apart from higher production levels, Choline's role in immunity, health and reproduction creates a strong argument for increased provision of bioavailable Choline.

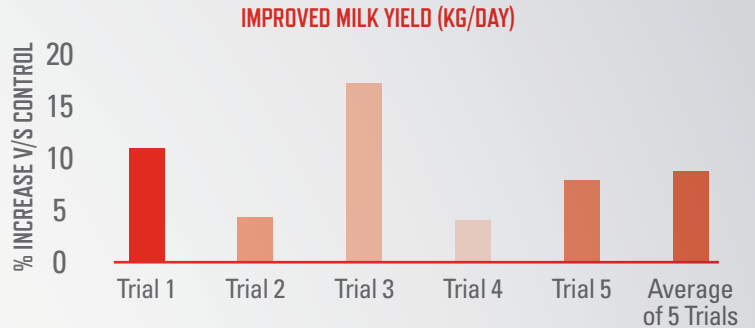
During the transition phase, Choline supplementation alters the plasma NEFA concentration. This increases the export of hepatic fat and results in less hepatic fat concentration and a reduced risk of fatty liver. If rumen-protected Choline is fed pre- and post-partum, it reduces the risk of clinical and subclinical ketosis and overall morbidity.

KEMIN'S EXPERTISE IN FORMULATING TRANSITION HEALTH

In our Formulating Ruminant Health Programme, tools are highlighted to optimize the liver's health during the transition period to maximize farm efficiency and profitability.

IMPROVED MILK YIELD

An improvement in dairy cow health directly increases nutrient use efficiency. A total of 5 feeding trials (Ardalan et al., 2010, Banadaky et al., 2007, ST-12-00002) on Kemin's Choline supplementation resulted in an average of 8.5% improvement in milk production.



IMPROVED MILK QUALITY

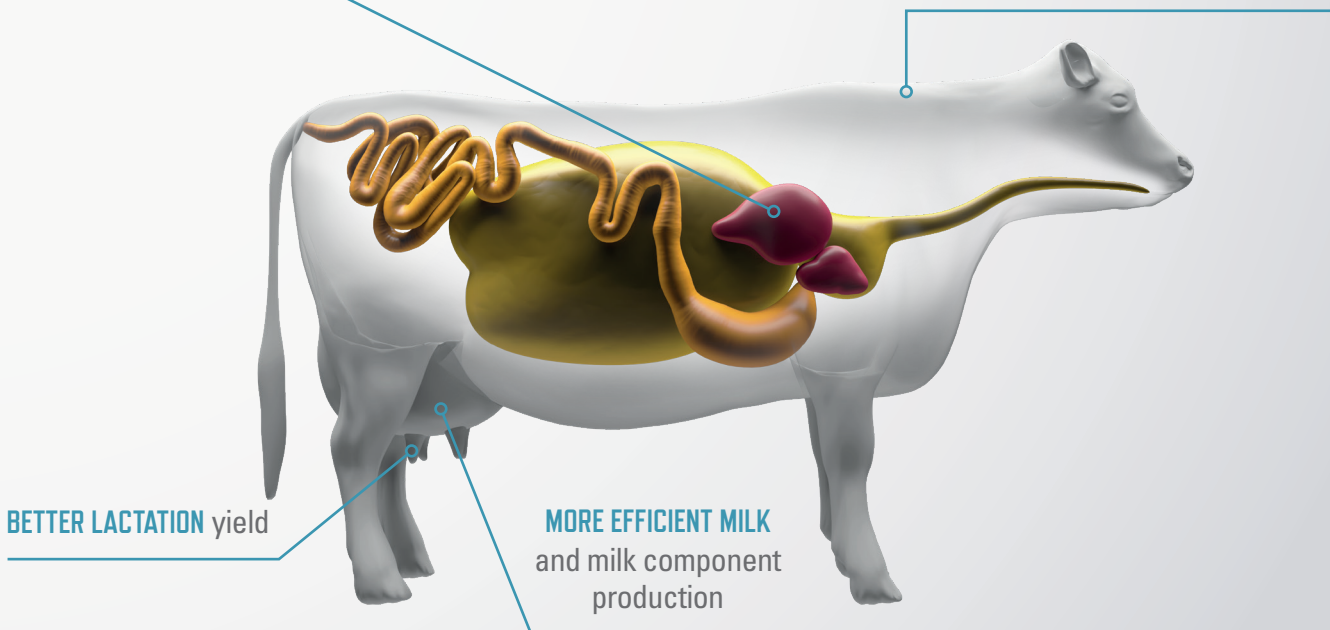
Supplementing Choline to dairy cows improves the quality of their milk. Kemin's Choline acts as a methyl donor and allows more nutrients to be available for milk synthesis in the mammary gland (Leiva et al., 2015).



ROLE OF KEMIN'S CHOLINE

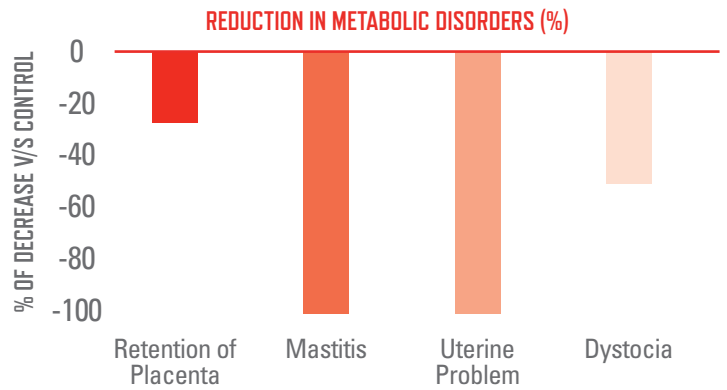
BETTER LIVER functioning

LOWER METABOLIC DISORDERS during transition phase



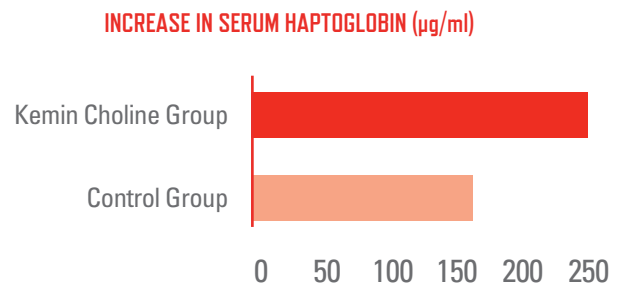
REDUCED METABOLIC DISORDERS

The cost of post-calving metabolic disorders is significant. It involves treatment costs, labour costs and the subsequent loss in milk production as well as reproduction inefficiency. Kemin's Choline nutrition reduced metabolic disorders so that cows produced more milk in whole lactation (Ardalan et al., 2010).



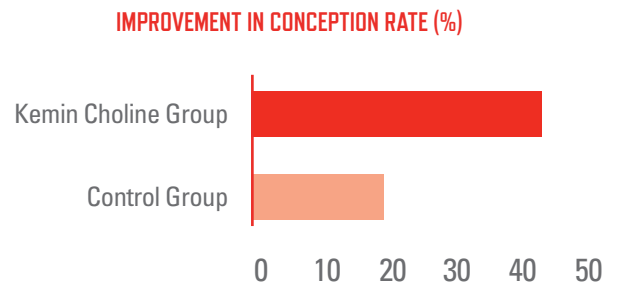
IMPROVED LIVER HEALTH

Optimizing the liver's health during the transition phase can significantly reduce the metabolic disorders mentioned above. An experiment conducted on Kemin's Choline supplementation significantly increased serum haptoglobin which is associated with a potential decrease in hepatic lipid accumulation and enhanced hepatic function in cows during transition phase (Leiva et al., 2015).

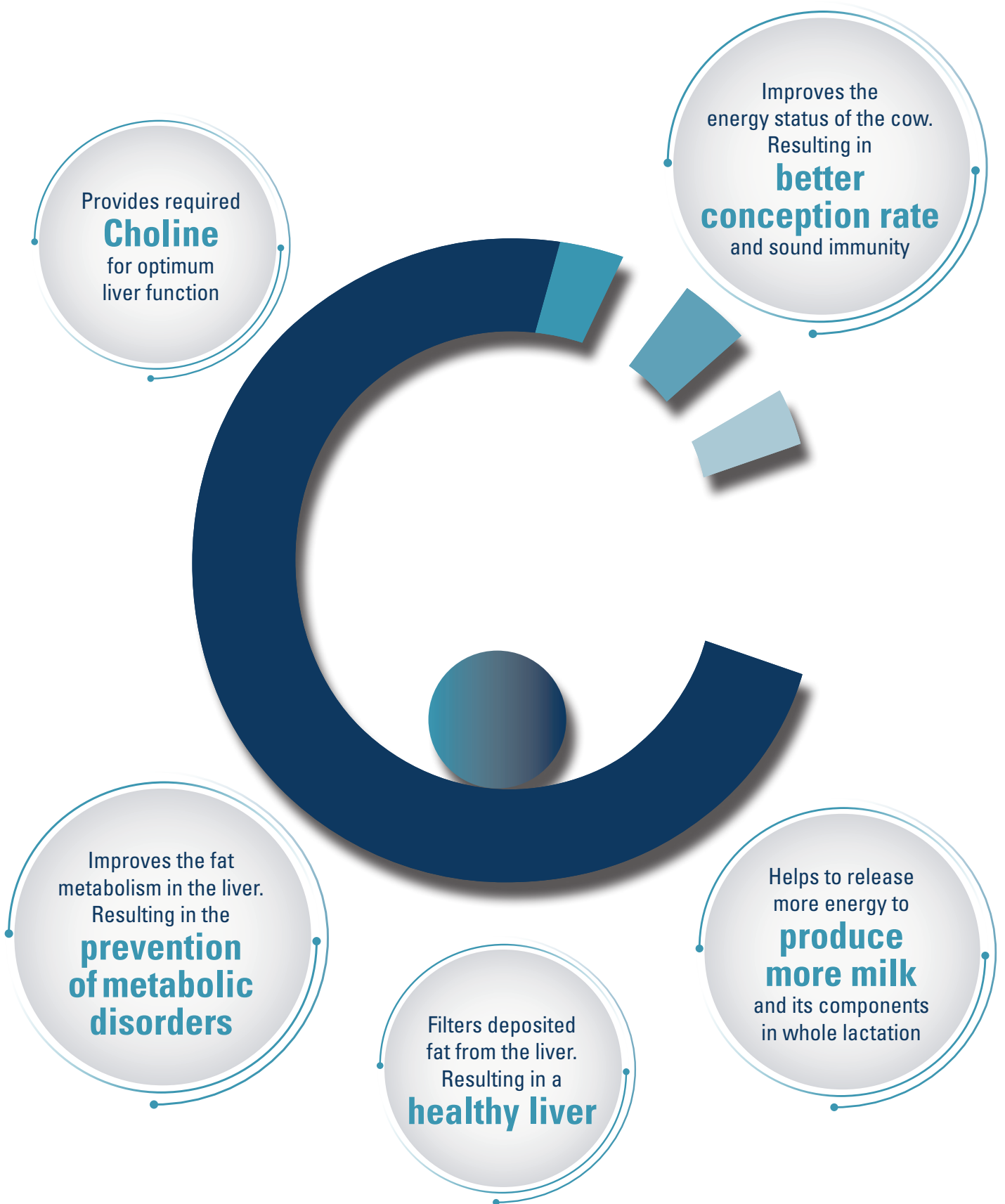


IMPROVED CONCEPTION RATES

An improved conception rate is directly correlated with saving money and time in dairy farming. Kemin's Choline nutrition helped attain better conception rate in dairy cows.



A NEW ERA IN ENCAPSULATED CHOLINE SOLUTIONS



CholiGEMTM
WHERE COW MEETS HEALTH

KEMIN SCIENTISTS HAVE DESIGNED A C³ MODEL TO ACHIEVE THE BEST RESULTS FROM SUPPLEMENTING CholiGEM.

CHOLINE CORE

Kemin developed its own Choline granules. An innovation which provides more than double the concentration of Choline chloride.

CHOLINE CONCENTRATION

Kemin's Choline core encapsulated with a scientific coating resulted in to 60% Choline chloride with superior bioavailability.



SCIENTIFIC COATING

Kemin encapsulates the Choline Core with different levels of technical ingredients, improving the strength of the coating. This coating isn't too strong or too weak, but a perfect scientific balance. Excellent results are obtained with our scientific balance of 60% Choline chloride in the encapsulation.

KEY FEATURES

CholiGEM provides Superior Bioavailability

CholiGEM with C³ Model brings you more than double the concentration and triple the bioavailability of choline which helps you in achieving greater performance from your cow and flexibility in diet formulation.

Kemin's "Formulating Ruminant Health Programme" is supported by the most experienced nutritionists and veterinarians in the EMENA region. CholiGEM generates the highest bioavailability resulting in furthermore benefits for our customers. **We are proud to lead the way.**

CholiGEM creates space in the diet

- ✓ Creates up to 30% additional space in the premix formulation
- ✓ Enables nutritionist to add other essential nutrients within their diets
- ✓ Provides additional income to premix producers

CholiGEM grows a healthy planet

Transportation represents almost a quarter of Europe's greenhouse gas emissions (GHG) and is the main cause of air pollution. Within this sector, road transport is by far the biggest emitter accounting for more than 70% of all GHG emissions from transport.

The lower inclusion level of CholiGEM reduces transportation requirements by up to 60%.

AVERAGE DOSAGE



DAIRY COW

15-30 g per head per day



BEEF CATTLE

10-15 g per head per day



SMALL RUMINANTS

3-6 g per head

PACKAGING



25 kg

Store in a cool and dry place (0-30°C) in the original package. Stable for 18 months. Keep bag closed when not in use.

ARE YOU READY FOR THE NEXT LEVEL IN RUMINANT NUTRITION?

RUMINANT ESSENTIALITIES

by KEMIN

A complete ruminant portfolio scientifically proven, consistently tested under field conditions and supported through our lifelong learning program.

INSPIRING AMINO ACID NUTRITION

KESSENT[®]
LysiGEM[™]
LysiPEARL[™]
MetiPEARL[™]

LEADING HEALTHY NUTRITION

CholiGEM[™]
CholiPEARL[™]
NutriCAB[™]
KemTRACE[™]
TOXFIN[®]



CholiGEM[™]
WHERE COW MEETS HEALTH



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