EA NEWS

ETHICAL AGENTS
VETERINARY MARKETING

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Edited by:
Dennis Scott BVSc MACVSc

EA Veterinary Marketing Ltd
54 Hobill Ave Wiri
PO Box 97-110 Manukau City
Manukau 2241

Ph 09-262-1388 Fax 09-262-1411
Freephone 0800 800-624
email info@ethicalagents.co.nz
website www.eavm.nz

Inside this issue:

What is Chitin?

Chitosan is derived from chitin. Just as vertebrates have a hard protective chemical, the protein keratin, forming hooves, nails and hair, invertebrates such as insects and crustaceans have a hard chemical, which is a polysaccharide called chitin, which is the basis of exoskeletons for insects and outer shells for crustaceans.

When treated with sodium chloride chitin is deacetylated to chitosan which has many different uses in agriculture, horticulture and also wound dressings.

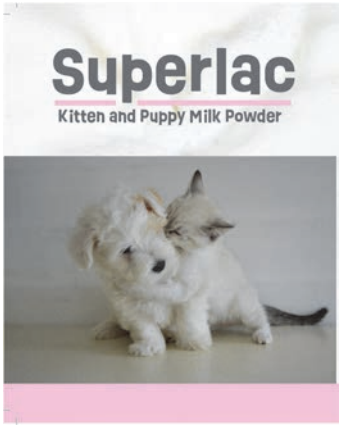
One special feature of chitosan is that it is a cation so binds rapidly to negative charged ions and it is this feature that makes it so important as an aid in control of kidney function.

Not a medication per se because it is not absorbed by the body chitosan acts within the gut itself to bind uraemic toxins so they are removed from the body. Officially designated as a therapeutic device together with calcium carbonate they bind toxins and also phosphate respectively.

Variety Inside

A little bit of everything, from product rebranding to a fresh look at chitosan and its role in renal health.

We also have a brief mention of a new zoonosis in Alaska, and an interesting look at the variability of milk in different species.



New Look For SedaLYTE

All companies do it – change the livery of a highly successful product to meet modern trends and keep the product to the front of mind.

Introducing the revamped SedaLYTE – a fresh new look that mirrors the modern excellence of our product. Our updated branding not only showcases the high quality of SedaLYTE but ensures it will effortlessly catch the eye of your customers on the shelf. Experience the perfect blend of tradition and innovation with the renewed SedaLYTE – because our equine companions deserve nothing but the best.

SedaLYTE: Your Equine Electrolyte Solution

SedaLYTE is a science-backed formulation designed to elevate a horse's well-being and performance.

What Sets SedaLYTE Apart:

- **Tailored Formulation:** Crafted through extensive research on sweat composition, SedaLYTE boasts elevated levels of essential electrolytes – Potassium, Sodium, Magnesium, and Chloride. SedaLYTE's balanced formulation closely mimics the actual composition of a horse's sweat which makes it effective in preventing poor performance due to sweat loss. It's about more of what truly matters and less of the unnecessary.

- **Performance Enhancement:** Inadequate electrolyte replacement can lead to dehydration, lethargy, reduced water intake, and muscle weakness. SedaLYTE steps in as an equine ally, delivering at least twice the amount of electrolytes per recommended dose. Preventing pitfalls and safeguarding against tying up (Equine rhabdomyolysis).

> "All companies do it – change the livery of a highly successful product"

- **Adaptable to Varied Conditions:** Horses work differently under diverse conditions. SedaLYTE's formulation and feeding guidelines adjust based on sweat loss, considering the intensity of exercise, as well as the temperature and humidity at the time of training. From light to heavy sweaters, you can trust SedaLYTE to replace lost electrolytes, ensuring peak performance in any climate.
- **Swift Hydration Support**: Enriched with glucose, SedaLYTE facilitates rapid electrolyte absorption into the gut. This swift action aids in preventing dehydration, promoting a horse's overall well-being.
- **Palatable and Practical:** To enhance electrolyte uptake, split the daily dosage. Morning and evening feeds ensure a balanced replenishment. The Granny Apple flavoring in SedaLYTE not only makes it irresistibly palatable but also ensures the horse looks forward to each dose.
- **Rule-Compliant and Trusted:** SedaLYTE will not contravene rules of racing that prohibit the use of sodium bicarbonate or other alkalinising agents prior to a race.

Sad News

A man in a bar sees a friend at a table drinking by himself. Approaching the friend he comments "You look terrible. What's the problem?"

"My mother died in August," he said, "and left me $25,000."

"Gee, that's tough," he replied.

"Then in September," the friend continued, "My father died, leaving me $90,000."

"Wow. Two parents gone in two months. No wonder you're depressed."

"And last month my aunt died, and left me $15,000."

"Three close family members lost in three months? How sad."

"And this month," continued, the friend sadly, "Nothing."

New Look For Superlac

If ever a product was in need of a rebrand it would have to be Superlac.

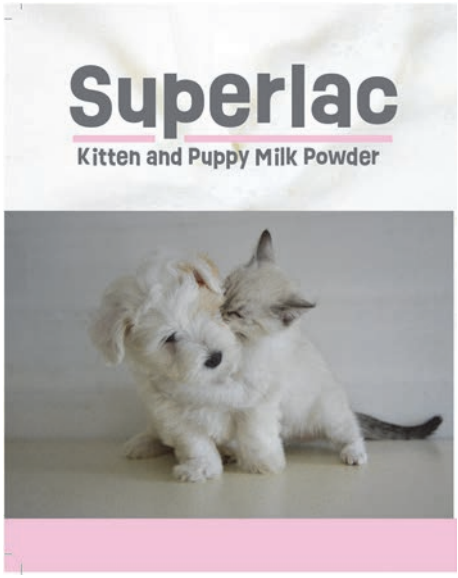
A major asset to veterinary practice for many decades this premium milk replacer for puppies and kittens was, until recently, still marketed in 1970's livery.

The stark black label with a scarlet panel and white bold writing may have hit the mark in the 20th Century, especially as an attention grabber sitting on a showroom shelf, but modern marketing demands a different approach.

Puppies and kittens are fluffy little bundles of cuteness and, rather than stand out boldly on a shelf, a milk powder needs to reflect this fact, especially with most marketing now on line or via other electronic media.

The new soft look for Superlac certainly reflects this, with soft colours and a cuddly image of a kitten and a puppy.

Superlac certainly is a superior product and it now has the imagery to match,



Alaskapox

Recently in the news is the relatively new discovery of Alaskapox. Alaskapox virus is an orthopoxvirus that was first identified in a patient in Fairbanks, Alaska, in 2015.

Orthopoxviruses are known to infect mammals, including humans, and can lead to the development of skin lesions. Classic examples in history are cowpox and the now eradicated smallpox, thank you vaccines. Since 2015, six additional cases of Alaskapox virus have been reported in Alaska with one death in an immunocompromised patient.

Current evidence indicates that Alaskapox virus primarily occurs in small mammals. Domestic pets (cats and dogs) may also play a role in spreading the virus.

To date, no human-to-human transmission of Alaskapox virus has been documented but the whole syndrome fits with the WHO assertion that the vast majority of new human disease are zoonoses..

Symptoms of Alaskapox have included one or more skin lesions (bumps or pustules) and other symptoms like swollen lymph nodes and joint and/or muscle pain. Immunocompromised people might be at increased risk for more severe illness.

The Test

Tony and Nagy applied for a job. Okay says the human resources manager, but first we have to give you a test to see if you're intelligent enough.

They go to the classroom for the test.

The first question on the test is " Old MacDonald had a _____."

After a few minutes, Tony whispers,

"Hey Nagy what did old MacDonald have?"

Nagy exclaims, "You dummy! Old MacDonald had a FARM!!"

"Ohh Yeah.... Okay." says Tony.

A couple of minutes later, Tony whispers again... " Hey Nagy, how do you spell FARM?"

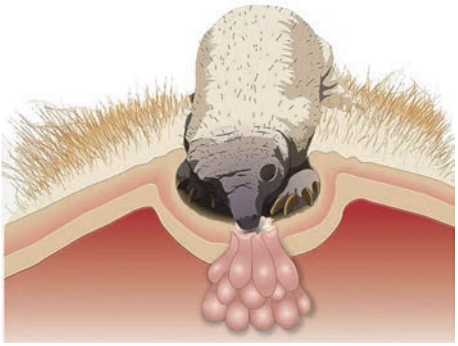
"Oh c'mon you dummy. Don't you remember the song?

"Old Mac Donald had a farm! E-I-E-I-O!!!"

Milk Vagaries

The word mammal, for many, conjures up images of herbivores with pendulous udders. In fact, these creatures are greatly in the minority; the presence of a pendulous udder would be a massive disadvantage in the natural world of predator versus prey. Actually, the larger udders of dairy species are brought about by the earliest form of genetic modification, human inspired selection of traits for efficient milking.

Not all mammals have udders and teats, although most do. Monotremes such as echidna and platypus, thanks to their jaws being evolved to eat hard-shelled prey, cannot suckle so the mothers do not have the traditional mammalian teats but secrete milk via hair follicles in pouches that the newborn slurps up.



Yet again these are very much in the minority, but considering the vast anatomical and physiological differences in the mammalian world it comes as no surprise that milk composition and production amongst the various species is also subject to great variation.

One of the most striking differences is in milk colour. Goat's milk is bone white while cow's milk is usually deep yellow. (Think how white goat cheese is in comparison). The reason for this is that goats convert beta-carotene into colorless Vitamin A. Cows do not convert the beta-carotene to the same extent so it ends up getting passed into their milk. This is the reason why NZ butter, from pasture fed animals, is a much deeper yellow colour than that from Northern Hemisphere feedlots.

Hippos are famous for producing pink milk but this is probably because hippos secrete an oily red viscous fluid that protects their skin from the sun and prevents the skin from drying out; this can mix with the baby's milk resulting in the pink colour.

Although the noted pink colour in hippo milk may be due to contamination from body oils, the little echidna does actually produce pink milk. The colour coming from the milk's very high iron content.

The other major colour oddity is the black rhinoceros with black milk. The reason for this leads us into another major variation in milk composition, the fat content.

Black milk is the slimmest milk containing a very little amount of fat (0.2%), and since the contents of fats and proteins are less, they tend to have fewer micelles to reflect and scatter light and so the milk has a blackish appearance. Therefore, the black rhinoceros produces black milk all due to their slow reproductive cycle.

"Think how white goat cheese is in comparison."

They have long pregnancies that last for over a year, and they give birth to one calf at a time. Then they spend a considerable amount of time, almost two years, nursing their young. Species that lactate for longer durations tend to have lower fat and proteins in their milk as investing in putting a lot of nutrients into milk is not really sustainable over a long period of time

At the other end of the scale hooded seal mothers produce the fattiest known milk. with more than 60 percent fat.

Such a high-fat diet is crucial for the seal pups, because these animals are born into the freezing waters of the North Atlantic and Arctic oceans.

Seal mothers give birth to pups on floating ice, an environment that is

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Milk Vagaries

(Continued from page 4)

both unstable and unreliable. So the mother seal feeds her pups for only four days, packing a lot of energy-dense fat into her milk.

Although some of these are extreme examples, it is no surprise to discover our domestic animals have some variation in milk composition and, when feeding orphaned animals, it is definitely not a 'one size fits all' approach.

Puppies and kittens have extremely rapid growth rates in the first few weeks of life, hence require a much richer brew, i.e. higher levels of lipids and proteins in milk compared to calves.

On the other hand, foals rapidly have to adapt to the life of the horse; they are mobile animals with a small stomach so generally are eating on the run, i.e. little and often. Horses are adapted for flight and in the wild they walk or run the equivalent of a marathon every single day. Thus they have developed small stomachs requiring regular small meals and also small udders that produce continuously.

While puppies naturally suckle every two hours, foals suckle approximately three times each hour, so that they require a more dilute mixture with much lower lipid content and higher water content.

The foal therefore drinks around one litre per hour meaning that the mare will produce around 24 litres of milk per day, similar to the cow but continuously, not stored in a large udder.

Calves are somewhat different, suckling naturally seven to ten times per day. In complete contrast to the horse ruminants have less frequent and larger meals that they digest more slowly.

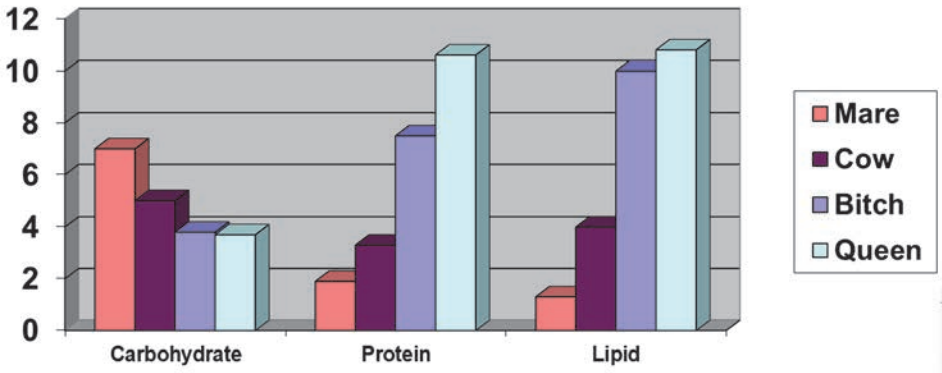
This of course means that cow's milk is not suitable for either foals or puppies and kittens, being too rich for the former and not high enough in energy for the latter.

Most products currently used as substitute milk for puppies and kittens, are based on standard cows' milk with very little modification. In these standard milk products, the low total solids, the increased fluid level, and high contribution of carbohydrate produce diarrhoea.

Superlac, a much more suitable product, contains the higher levels of protein and fats, for growth and energy, plus crucial vitamins. It has a lower level of carbohydrate and also incorporates the essential mono and polyunsaturated fats, including the important Omega-3 essential fatty acids.

The energy requirements of pregnant bitches and queens are quite elevated so feeding them Superlac enables them to have reserves of energy for whelping and allow them to continue to supply adequate milk to the newborn.

Comparison Between Milk From Mare, Cow, Bitch, and Queen



The Blacksmith's Apprentice

An old blacksmith realized he was going to have to retire soon, so he picked out a strong young man to become his apprentice.

The old fellow was crabby and exacting. "Don't ask me a lot of questions" he told the boy, "Just do whatever I tell you to do."

One day the old blacksmith took an iron out of the forge and laid it on the anvil. "Get the hammer over there. When I nod my head, hit it real good and hard."

The town is currently looking for a new blacksmith.

Chronic Renal Failure–The Problem

Chronic renal failure (CRF) is more frequent in the cat than in the dog (cat > 15 years old = 30-40% dog > 17 years old = 17%). The frequency increases with the age (13 year-old-cat = 20% 17 year-old-cat > of 50%). Success rates in the cat are much greater than the dog in terms of longevity after commencement of treatment.

"This means the disease is well advanced before clinical signs actually appear."

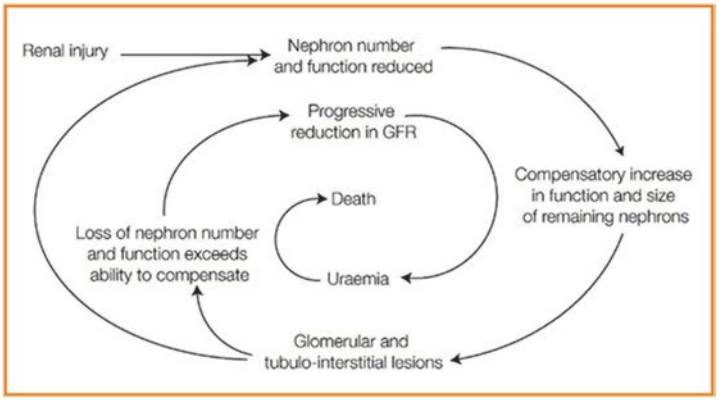
The nephron is not functional anymore when damaged, whatever the location of the damage. However functional adaptation (hypertrophy and hyperfiltration) of healthy nephrons occurs so that normal renal function continues. This however places excess strain on these remaining functional nephrons so that they also become damaged.

The appearance of CRF clinical signs occurs when the overall mass of the functional nephrons is reduced by 2/3. This means the disease is well advanced before clinical signs actually appear.

The CRF develops in 4 stages:

Stage 1 = Compensation phase where < 2/3 of the nephrons are affected and there are no clinical signs. During the compensation phase: the damaged nephrons are excluded and there is functional adaptation (hypertrophy and hyperfiltration) of healthy nephrons = SUPER-NEPHRONS and normal renal functions are retained.

Stage 2 = Then comes the decompensation phase: with development of lesions (glomerulosclerosis) and reduction of the number of healthy nephrons When the overall mass of the functional nephrons is reduced by 2/3 there is the appearance of CRF clinical signs, polyuria/polydypsia, vomiting and anorexia.



Stage 3 = beginning of the renal failure and signs include polyuria/polydypsia, fatigue, depression, weight loss, anorexia, diarrhoea, and vomiting

Stage 4 = uraemic syndrome which is very severe and results in: 1) Digestive disorders: odour of the mouth, ulcers, diarrhoea 2) Bony disorders, rubber jaws. 3) Nervous disorders: convulsion, prostration, comatose state. 4) Haematological disorders: anaemia. 5) Cardiorespiratory and vascular disorders

The clinical signs and the CRF development are secondary to waste retention (producing uraemic toxins) and to compensator mechanisms leading to hyperparathyroidism.

The classic uraemic toxins are urea, creatinine, guanidines, from waste retention, plus toxins of medium molecular weight (PTH) due to compensator mechanisms. Then there are the new uraemic toxins (hippuric acid, sulfate indoxyl, P-cresol) due to CRF ==> Associated digestive disorders and thus modification of the intestinal flora leading to production of uraemic toxins which diffuse into the blood circulation (E. coli convert tryptophan to indole which the body converts to sulphate indoxyl, sulfate indoxyl stimulates the glomerulosclerosis progress).

Treatment is aimed at reducing the clinical signs of CRF and slowing down CRF progress by protecting healthy nephrons.

The Snitch

"Hey Mom?" asked Little Johnny, "Can you give me $20?"

"Certainly not," She replied.

"If you do," he went on, "I'll tell you what Dad said to the maid when you were at the beauty shop."

His mother's ears perked up and, grabbing her purse, she handed over the money. "Well? What did he say?"

"He said, 'Hey Maria, could you make sure I've got clean socks tomorrow.'"

Chronic Renal Failure–Options

There is no magic bullet to cure CRF. Certainly no simple pharmacological options.

There are two possible options, to prolong life, neither involving drug therapy; they are low protein diets and phosphate binders.

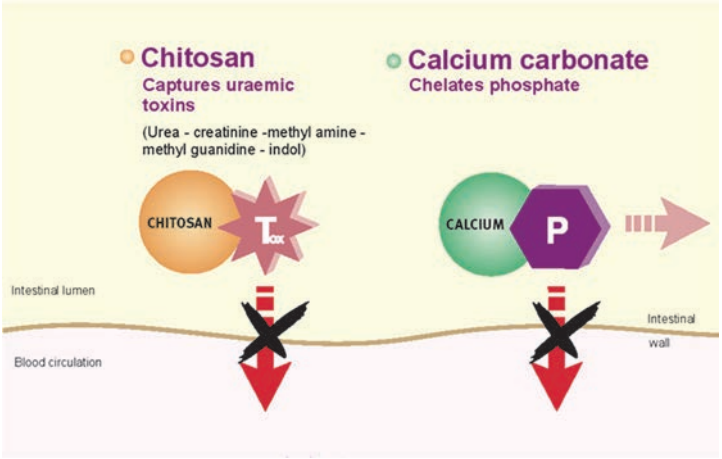
Low protein diets have proven to be not very successful in treating cats with chronic renal failure for two major reasons.

First of all, cat liver enzymes digest protein after every meal, regardless of the protein type or level supplied. This means an emaciated cat with CRF on a low protein diet, will catabolize body protein, adding to the emaciation.

The other huge problem is owner compliance. Low protein means low palatability; thus, we have animals with reduced appetites, a symptom of CRF, being fed diets of low palatability.

" an emaciated cat with CRF on a low protein diet, will catabolize body protein, adding to the emaciation."

Practitioners nationwide attest to the difficulty of having cats eat such diets. There is a wealth of literature now querying their efficacy as well. Thus low protein diets look to have had their day. It is far more beneficial to restrict dietary phosphate using phosphate binders.



Chitosan, in combination with calcium carbonate, has shown major success in alleviating chronic renal failure. Phosphate and toxin binding have proven superior to protein reduction in both cats and dogs.

Chitosan is a polysaccharide similar to cellulose and is obtained from chitin, a component extracted from the shells of crustaceans (shell fish such as crabs).

When protein is eaten and digested, tryptophan in the food is converted into indoxyl, which in turn is converted by the body into indoxyl sulphate, a type of uraemic toxin. Chitosan binds with the indoxyl, so it cannot be converted to indoxyl sulphate, thus reducing toxin levels. Chitosan has an amine function that binds to the acid metabolites, catches the uraemic toxins formed in the digestive tract and produces a very solid complex eliminated in the faeces. Chitosan also helps reduce BUN/urea levels, and indirectly to reduce creatinine levels.

Chitosan may reduce cholesterol levels as well, and is said to increase levels of haemoglobin.

References:

Well researched literature in human medicine journals certainly shows the benefits of chitosan.

Effect of chitosan on renal function in patients with chronic renal failure (1997) Jing SB, Li L, Ji D, Takiguchi Y, Yamaguchi T The Journal of Pharmacy and Pharmacology 49 pp721-23 describes a human trial into the effects of chitosan on 80 patients undergoing long term haemodialyis in Japan. The patients' cholesterol levels reduced and their haemoglobin levels increased, and their appetites improved; reductions in BUN/urea and creatinine were also seen after four weeks of treatment.

Effect of iron (III) chitosan intake on the reduction of serum phosphorus levels in rats (2000) Baxter J, Shimizu F, Takiguchi Y, Wada M, Yamaguchi T The Journal of Pharmacy and Pharmacology 52 pp863-74 indicated that a compound of iron and chitosan might be a more effective phosphorus binder than the commonly used binders.

Maths

Nagy is making conversation with a vet nurse. He asks her, "Do you have any children?"

She tells him, "I have one that's under two."

Nagy rather stiffly replies,

"I know how much one is."

Divorce

A man and his wife are driving down the road as the wife says, "I want a divorce."

The man says nothing, just speeds up slightly.

The woman continues, "That's not all. I'm taking the house, the car, the kids, and the bank account."

The man remains a statue, only speeding up a little.

The woman, getting angry, yells at him, "Don't you have anything to say?"

The man replies, "Nope. I have everything I need."

The woman asks him, "What do you have?"

Just as they are about to slam into a tree going 160 kph he yells,

"The airbag!"