

**Racing Edition**

Issue **10** (Oct - Dec)

**Talking Horses 2006**

for  
*Gallopers  
&  
Pacers*



# Talking Horses

The newsletter with news, views and practical advice  
from the editor

## THIS ISSUE Feature Article

- **Blood Tests**  
– Profiles of Common Problems  
*Also a brief on*
- **Tendon Rehab** – New Therapies  
for an old Problem
- **Anti-Concussion Shoeing**  
– Bevelled Shoes and Silastic

The latest forecast is for a long, hot summer, with rising feed costs on the East Coast due to the drought. El Nino is back with a long dry period which means hard tracks, with increased concussion and joint 'wear and tear'. On page 6, we provide details of how to protect the soles by using bevelled shoes and silastic sealant to cushion the edge of the toes and heels.

In this issue, we complete our 2 part series on blood counts, with typical blood readings for a horse that is 'tying up', one with airway disease, another that is dehydrated. We have included lots of handy hints on the function of white cells and biochemical readings, with a brief discussion on the underlying causes of low and high readings.

Tendon problems are often of long term concern for many trainers. We review some of the new therapies that are being trialled and becoming available to improve the chances that a horse will remain sound for a long term racing career after suffering a 'bowed tendon' or a strained suspensory ligament. Tendon injuries were fully reviewed in Issue 2, August 2004 – if you didn't receive the earlier issues of 'Talking Horses' then ring our Freecall number 1800 112 227 and Kerry will forward back issues to you.

All the best for the forthcoming Spring Carnivals and of course, the fantastic meetings in each State around the Melbourne Cup for gallopers and the great Harness Racing leading up to Christmas.

*Good Racing*      **John Kohnke**

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## HANDY HINT **1**

**Sealing Up Sand Cracks.** Variations in hoof moisture content causes shrinkage on drying out and swelling of the tubules of the sole and hoof wall under wet conditions. This can result in brittle hoof edges, breakaway and sand cracks. To avoid 'sand cracks' enlarging, carefully clean out the split hoof wall with a tooth pick. Wash and swab with methylated spirits to remove oils and moisture. Smear over the crack with silastic sealant to seal out sand and grit. Wrap the hoof in a layer of kitchen wrap (eg Gladwrap®) to protect from sand and bedding as it cures. Allow to cure for 12 hours and then apply a coating of Kohnke's Own Hoof-Seal® twice weekly to help maintain optimum hoof condition under dry or wet conditions.

## HANDY HINT **2**

**Reducing Wastage of Hay.** Dry hay is a source of dust and airborne moulds that can be inhaled as a horse eats. It's more easily pulled apart and wasted, with up to 50% of dry hay dropped as it is eaten. A simple way is to place a biscuit or allocated portion into a polywoven chaff bag and spray it with 1-2 litres of clean water over the narrow (cut ends) edge so that the water soaks down through the hay. Hang above ground as it soaks and drains for 10-15 minutes and then feed it out – damp hay is non dusty and less is wasted. You can prepare hay in the morning for the evening feed and vice-versa, but don't let it remain damp for more than 12 hours.

***Kohnke's Own***

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# Blood Tests – Profiles of Common Problems

A blood test basically measures the concentration of red and white cells, biochemical substances such as enzymes, proteins, electrolytes and metabolic compounds in a certain volume of blood. Variations of these readings, above or below, the 'normal' range established for a healthy horse, can provide an indication of an underlying disease process, metabolic problem, deficiency or imbalance, or other conditions that can adversely affect a horse's health and performance. Blood counts are often used to evaluate a horse's 'fitness' or readiness for racing, and although they are useful to monitor a horse's response to training, or help determine the underlying reason for a poor performance, they are not infallible indicators of a horse's likelihood to win on a certain day.

Although a horse may be regarded as "fit" because it has a high red cell count, this may be artificially elevated due to dehydration (loss of blood fluid that concentrates the red cells), or the excitement of being 'spooked up', with a splenic release of red cell reserves into the blood, by the sight or sensation of the needle jab into the vein.

**A blood sample taken after feeding or exercise is likely to indicate slight dehydration by higher plasma protein, or with a lower potassium reading because of loss of potassium in saliva when chewing and sweat loss during and following exercise.**

As outlined in Part 1 of this series (Talking Horses Racing Issue 9), the time of collection, the horse's attitude as well as the length of storage and transport duration and conditions can significantly affect the values of a number of readings in a blood sample.

A survey of common conditions that plague racehorses in training, carried out in the late 1990s, indicated that anaemia, dehydration, lung bleeding and 'tying-up' were the three most common medical type problems reported by trainers, other than lameness.

## Blood Profile of 'Tying-Up'

'Tying Up' ('Set Fast') or "Exercise-Induced Rhabdomyolysis" (muscle inflammation and 'melt away') is the most common combined muscular and metabolic syndrome in racing and working horses. Fillies are 4 times more likely to suffer from 'tying up' than colts or geldings. The underlying causes include working an unfit horse too fast too early in training, maintaining a horse on a high grain ration, especially oats, during a lighter work or rest day, or when training is cut back due to poor weather or an injury, a nervous, immature type of filly, as well as electrolyte abnormalities with a low blood level of sodium and potassium, most commonly in heavily sweating or 'nervy' horses. In some 'nervy' horses, exposure to a stressful condition, such as change in training routine, transport or barrier training can trigger a 'tying up' episode. **Over the past decade, studies by Dr Stephanie Valberg in the USA and Dr Patricia Harris in the UK and Prof. David Hodgson in Australia, have linked an inherited, genetic form in some bloodlines, which appears to be more common in Standardbred fillies than in Thoroughbreds. It is termed "Polysaccharide Storage Myopathy" or PSSM for short, and is considered a less severe condition than Equine Polysaccharide Myopathy (EPM) that occurs in draught horses.** These studies have shown that affected horses usually have 'hard' or bulky muscles due to the excess accumulation of muscle glycogen (muscle energy sugar) in the hindlimb muscles, often on a high oat based diet. Oats has a very soluble carbohydrate (starch) that is 75% absorbed from the small intestine and can be rapidly accumulated overnight in the hind limb driving muscles, especially when fed in the evening meal. When worked next morning, the muscles are unable to rapidly release the glycogen for contraction and relaxation processes and the horse begins to 'tie up'. **Note: It is beyond the scope of this review to fully discuss 'tying up'. This is covered, including dietary guidelines in the fact sheet "Feeding to Avoid Tying Up", available by ringing Kerry on 1800 112 227 or emailing adminjpk@bigpond.com for a copy.**

## HANDY HINT

# 4

### Diagnosis of Subclinical 'Tying Up'.

Although the more severe forms of 'tying up' are obvious as a stiff, shortened stride, subclinical or mild forms are often associated with a subtle loss of finishing ability and transient muscle swelling and pain after a hard gallop or race. By the time the horse is walked off the track and back to the stalls or stables, the muscles free up and symptoms disappear. If you suspect that a horse has a mild form of 'tying up' that could affect its performance, a blood test taken before racing and then again within 36 hours after exercise, can identify increased creatine kinase (CK) enzyme levels – if the CK reading doubles (above 500 U/L) within 24-36 hours, the horse is likely to be suffering subclinical 'tying up' that could affect its raceday performance.

## HANDY HINT

# 3

Many blood counts that you get back from your vet, will have readings for Mean Cell Volume (fl) (MCV), Mean Cell Haemoglobin Concentration (g/L) (MCHC), and Mean Cell Haemoglobin (pg) (MCH). These readings are calculations based on the haemoglobin, PCV and total red cell count that give an estimation of the relative cell size and the amount of haemoglobin packed into the cells. Although a lot of emphasis is placed on these readings, in most cases, the MCH and MCHC will be within normal limits except when a horse is extremely anaemic. This will be confirmed by the clinical signs of poor stamina during work, pale gums, and poor response to training, as well as a low red cell count and Packed Cell Volume (PCV).

## Did You Know ???

**Estimating the Time Scale of 'Tying Up'.** Often a blood test indicates an elevated AST and/or CK enzyme reading relating to 'tying up' and muscle damage. The relative time of a mild 'tying up' episode can be pinpointed by the clearance of CK from the blood. CK due to muscle damage is released within 6 hours, and clears to normal range values within 36 hours. AST on the other hand, is released around 12 hours after muscle damage, but can take up to 3 weeks to slowly decrease and return to normal levels. Repeated subclinical episodes of 'tying up' may result in CK not being detected in routine blood tests, but the AST may remain elevated above 600-1000 U/L for a number of weeks as its clearance time is extended. A blood sample taken 36-48 hours after a disappointing performance may miss elevated CK levels, but identify an increase in AST enzyme. In cases where CK and AST are consistently elevated if blood is taken at 7-10 day intervals, a muscle amino acid supplement, such as Kohnke's Own **Muscle XL** containing glutamine and a full range of recovery amino acids, Vitamin E and organic zinc, can help to provide nutrients to correct low dietary levels to assist muscle recovery and repair processes.

## Tying Up Blood Profile Cont.

Clinical signs that may be present	Blood Changes may include:	Treatment/Management that may be advised:
Stiffness in hindleg movement, sweating in severe cases due to muscle pain, shortened shuffling gait, reluctance to move.	Blood samples taken within 24 hours will indicate serum AST (formerly SGOT) readings above 400U/L, in severe cases up to 10,000U/L. Elevated serum CK above 300-400U/L, sodium and/or potassium levels may be decreased.	Mild cases – elevated AST and CK below 1000U/L – cut back grain for 3-4 days, eliminate oats from diet and supplement with salts, 2000IU Vitamin E (eg <b>Cell-E Premium</b> ) and muscle amino acids (eg 60g <b>Muscle XL</b> ) for 7-10 days to assist muscle recovery. Warm up well prior to fast exercise and work every day – no days off.
Swollen, sore muscles on rump and croup.	Higher levels of AST and CK, often with elevated total protein above 67g/L indicating dehydration. Elevated white cell count above $9 \times 10^9/L$ , with high neutrophils above 65% and less than 30% lymphocytes due to inflammation and stress.	Rest from training for 5-7 days, cut back on grain to one third – eliminate oats if filly is naturally ‘hard’ in the muscles before exercise or has ‘bulky’ hindquarters, indicating possible PSSM inherited syndrome. Injections of Selenium-Vitamin E and oral muscle buffers may be indicated.
Urinating dark coloured urine for 12-24 hours after a severe tying up episode.	Extremely high AST & CK levels over 10,000U/L, elevated total protein, elevated white cells, low potassium due to severe muscle cell damage.	Rest from training for at least 2-3 weeks, seek veterinary advice. Oral muscle buffers, electrolytes, Vitamin E 2000IU daily, amino acids (eg <b>Muscle XL</b> 60g daily) and change of diet if PSSM is suspected (See Factsheet).

## Blood Profile of Lower Airway Disease

Chronic, low grade airway disease is a common diagnosis in racehorses as a cause of poor performance. The inhalation of small dust particles from feed and bedding, which may include fungi and mould, and dust stirred up during training on dry tracks, may increase lower airway irritation and inflammation, which can adversely affect exercise capacity under race conditions. Inhalation of dust trapped on the moist nasal passages in the 2,250 litres inhaled into the lungs each minute at a flow rate of 70 litres per second during exercise, can increase bacterial and fungal contamination in the lower airways, resulting in low grade airway disease. It may also prolong recovery from viral respiratory infections.

Clinical signs that may be present	Blood Changes may include	Treatment/Management that may be advised
Coughing and wheezing during exercise. Reduced exercise tolerance.	Acute airway disease results in an elevated temperature, depression, loss of appetite and reduced exercise tolerance.	Treatment with antimicrobial and airway mucolytic preparations as prescribed by your vet for 7-10 days.
White mucoid nasal discharge (upper airway dust contamination)	Lowered lymphocytes and globulin levels may be associated with viral or bacterial airway infection.	Providing dampened feed at ground level, or turn out for ‘head down’ pasture grazing to assist lower airway drainage.
Slow recovery after training or racing, with blowing after exercise. Symptoms of acute travelling or transport sickness with elevated temperature and reduced respiratory function may develop during or following long distance travelling.	Normal or slightly elevated white cell counts above $8-9 \times 10^9/L$ with higher proportion of monocyte cells (greater than 4-5%) in an otherwise healthy horse, can signify increased airway irritation and clearance of dust and mould debris from lower airways.	Feed at ground level or provide pasture grazing for 1-2 days after long distance travel or racing. Allow 20 mins grazing or head down feeding every 5 hours during extended travel, especially on return from racing to facilitate airway drainage.

### Seasonal Reminders

#### Worming

The usual reminder – worm out horses coming in from winter recess in early Spring, followed by a tape wormer in mid October to control common tapeworms

#### Hoof Care

The often changing weather conditions in Spring – from wet to warm/dry can increase the risk of moisture variations in the hoof wall and sole – leading to hoof cracks and hoof bruising.

A twice weekly application of Kohnke’s Own **Hoof-Seal**® which maintains a protective, but breathable film on the hooves and soles helps to minimise moisture variations due to weather and track conditions. It doesn’t melt or wear off like hoof greases – its now available in 20 litre drums for larger stables – cuts costs to 70 cents for 2 applications a week.

### HANDY HINT

# 5

**Risk of Transport Sickness.** Long distance travel for more than 4 hours can increase fluid retention in the lower sections of the lungs and increase the risk of small airway disease and reduced oxygen uptake. After racing, lower airway contamination with harmful anaerobic bacteria inhaled from the nasal and throat secretions can increase by 40 times, with risk of acute infection. Poor recovery, depression and an elevated temperature after long distance travelling, particularly soon after racing, could indicate “transport sickness” or “travelling disease”. Seek immediate veterinary attention.

# 6

### HANDY HINT

**Blood changes in a bleeder.** Bleeding in the lungs occurs to some degree in 90% of galloping or harness racing horses each time they are fast-worked or raced. Only 2% of horses show blood at the nostrils, with most horses being ‘hidden’ bleeders. Symptoms include failure to finish strongly, coughing after exercise and a dull rough coat, as well as blood at the nostrils. Blood changes that indicate blood loss from lung haemorrhage include lowered red cell count, low potassium and total protein due to blood loss, and elevated liver readings, bilirubin above 45-50mmol/L and GGT above 50-75U/L as blood cells are scavenged from the airways, carried to the throat, swallowed and recycled through the liver. **Note: Bleeding has been reviewed in Issue 5. Please ring Kerry on 1800 112 227 for this, or other back issues.**

# Blood Profiles of Dehydration

Dehydration or loss of blood and body fluids is one of the most common reasons for reduced performance and other metabolic conditions associated with loss of water and resulting in electrolyte abnormalities, especially in horses in training or those travelling during hot, humid conditions.

Loss of body fluids can also occur as a result of acute or chronic diarrhoea, excessively high protein diets and diets that are low in fibre and high in grain, with lower fluid reserves in the hindgut. Administration of concentrated (hypertonic) saline drenches (concentrated salts in low volume of water) can lead to severe dehydration due to fluid loss from diarrhoea. Inadequate water intake or reduced opportunity to drink can lead to dehydration in horses suffering from increased sweat and respiratory losses of fluid during hot conditions. The severity of clinical dehydration is classified into mild, moderate and severe, relative to the degree of fluid loss.

## Normal Hydration

**Total Protein 60-64g/L** PCV (Hct) 0.34-0.40. Elastic skin. Not 'tucked up' in the belly.

## Mild Dehydration

Up to 4% fluid loss – light sweating, long distance exercise, hot weather.

**Total Protein 65-67g/L**, PCV (Hct) 0.40 – 0.45.

Slightly less elastic skin, dull coat. Provide salts and dampen hay. Ensure adequate clean fresh water.

## Moderate Dehydration

Up to 5-6% fluid loss – 25-35kg body weight loss - heavy sweating, hot weather, diarrhoea, inadequate water intake. Dry mouth, dull coat, slow skin "pinch" return, 'tucked up' in the belly.

**Total protein 68-80g/L**, PCV (Hct) 0.46-0.50. Provide salts – maybe drench by vet or fluids in vein. Dampen all feed.

Ensure adequate water. Reduce sweat loss by cooling after exercise.

## Severe Dehydration

Serious condition – above 7% fluid loss – 35-50kg body weight loss - usually severe diarrhoea, no water. Dry mouth, sunken eye, slow capillary refill, dark mouth membranes and gums. Severely 'tucked up' – dull and listless.

**Total protein above 80g/L**, elevated PCV (Hct) above 50. Elevated electrolytes and red cell count. IV fluids by vet and monitor. Do not work – risk of muscle damage.

## Did You Know ???

In years gone by, great emphasis was placed on the Erythrocyte Sedimentation Rate (ESR), or what is commonly referred to as the "fitness" reading. The sedimentation rate, or ESR, is the measure of separation speed of the cell part of the blood from the liquid part, measured in a simple vertical tube. When a horse has a high red cell count, the ESR will be increased in time. Horse red blood cells actually form "chains" ("rouleaux") that increase their rate of separation from the blood fluid compared to other animals. The range is so wide that any indication of a horse's fitness is probably a 'guesstimate' from the ESR reading alone. Moreover, if the blood is collected more than 2 hours before the sedimentation reading is carried out, the accuracy is much reduced. Generally, it is a waste of time to put any credence on the actual value on a single ESR reading in one particular horse. A number of ESR readings taken on the one horse will give an idea of a sedimentation pattern for the horse and some authorities believe this can be associated with performance ability. If a horse is dehydrated, the PCV (Hct) and the total protein (TP) will be increased, especially if fibrinogen readings are above 4 g/L due to infection and the sedimentation rate will be increased, and will give an inaccurate interpretation.

## 7 HANDY HINT

Dehydration can mask 'anaemia' or a low red cell count by concentrating the red cell numbers in a lower amount of blood fluid or 'plasma'. It is essential that all blood profiles include the measurement of Total Protein (TP) to help ensure accuracy of interpreting blood test results. TP readings above 67g/litre in a racehorse indicate mild dehydration. **Note:**

The total concentration of TP in a blood count indicates the relative amount of fluid in the blood. Elevated RBC and PCV (Hct) readings could be due to dehydration or excitement at blood collection. TP readings are only increased by dehydration. It is essential that TP readings be included in red blood count tests.

## 8 HANDY HINT

### Low Total Protein (TP) Readings.

Although certain types of liver disease can reduce albumin production as a constituent of blood proteins, which lower the TP readings, in most cases, TP below 56g/L usually indicates blood loss due to internal haemorrhage or loss of protein from the small intestine due to diarrhoea – rather than a diet low in protein. If other readings such as RBC count, PCV (Hct), potassium are low, a low TP could indicate gastric ulcers or "bleeding" – consult your vet.

## 9 HANDY HINT

**Blood Changes for Gastric Ulcers.** Gastric ulcers and acid burn of the upper stomach wall affects up to 90% of horses in training. Up to 1.5 litres of blood can be haemorrhaged into the stomach from a bleeding ulcer(s) when racing. Although the blood changes are similar to those of bleeding in the lungs (see Handy Hint above) due to loss and recycling of red cells, the symptoms are distinctive – progressive loss of appetite, 'picky' eating after fastwork or racing, 'girthy', dull coat and preference to eat hay rather than grain. A supplement to maintain natural gastric protection, such as Kohnke's Own **Gastro-Coat**, may help the appetite in 'picky' eaters.

**Note: Gastric ulcers were reviewed in Issue 4. Please ring Kerry on 1800 112 227 for this, or other back issues.**

# New Therapies to Aid Tendon Repair

Tendon tissue is notoriously slow to heal due to the high matrix to cell ratio and limited blood flow to supply nutrients for repair processes. New therapies and rehabilitation programs can help improve the success of tendon repair. **Note: A comprehensive review of tendon injury and a step-wise rehabilitation plan was established in Issue 2 – please contact Kerry on 1800 112 227 for this back issue.**

Over recent years, a number of new technologies have been developed and evaluated that can help improve the rate and eventual strength of tendon repair. Research into the repair processes that are reliant on providing an internal scaffold for tissue cell growth, primary or precursor cells (stem cells) that develop into tendon cells, growth factors to stimulate tissue repair and optimum nutrition with controlled loading to stimulate repair, has provided some practical new ways of reducing downtime from training whilst increasing the strength and long term soundness of rehabilitated tendons.

## Internal Scaffold

A new living tissue repair scaffold has been developed from laboratory grown tissue cultures of urinary bladder wall matrix for wound healing applications. The matrix provides proteins, collagen and glycosaminoglycans (GAG's) that forms a biodegradable tissue scaffold onto which tendon fibroblasts can adhere and deposit Cartilage Oligomeric Matrix Proteins (COMP) across the disrupted fibrils. The scaffold tissue cells are injected into the site of tendon injury and preliminary results indicate up to 80% success, but more research has to be carried out in regards to safety and cost of this new treatment.

## Autogenous Bone Marrow Cells

A promising new method of injecting cells (called mesenchymal stem cells or MSC) harvested from a horse's own bone marrow may have the potential of developing into mature tendon fibroblast cells that produce new collagen type I matrix (COMP). At present the large volume of bone marrow fluid that needs to be injected into the tendon can mechanically damage the tendon at the injury site and may delay healing, but ongoing research aims to overcome those potential problems.

## Stem Cell Implantation

Laboratory culture of harvested MSC's from a horse's own bone marrow to increase the concentration of healing cells, as a small volume of injection, is currently available in the United Kingdom. However, whilst the method has potential in providing specific cells in a low volume of fluid, the major disadvantage is that it takes 2-3 weeks to culture and concentrate the bone marrow cells, which may delay the benefits they would give the critical early healing processes in damaged tendons.

## Fat Derived Stem Cells

This is an exciting new technique, currently available in the United Kingdom which has been developed where a horse's own MSC's are harvested from fat deposits around the tail butt then concentrated in a laboratory over a 2 day period and injected into the injured area. Studies indicate that the COMP levels were increased at the injury site, with an anti-inflammatory benefit and normalizing of tendon structure more rapidly after treatment. The technique is relatively simple and cost effective and research is continuing to improve the process and monitor recovery rates.

## Shock Wave Therapy

Extracorporeal Shock Wave Therapy (ESWT) is based on high energy electromagnetic impulses or shock waves that have been shown to increase blood vessel regeneration in tendon tissue. However, ESWT machines are not readily accessible and experienced application is necessary to avoid further damage and disruption to the healing tendon cells.

## Surgical Options

Over the last 20 years, various surgical techniques including tendon splitting, carbon filament insertion (as a scaffolding and high loading fibre) and cutting the upper check ligament, have been tried as a means of improving the overall result in tendon repair. However, while check ligament surgery has benefit in reducing the mechanical loading in Harness horses as the tendon heals, there is a risk of increasing suspensory ligament strain in galloping horses.

## Growth Hormone Therapy

Original research in Australia using equine growth hormone has provided promising results in assisting tissue repair associated with tendon injuries. Recent overseas research has identified an insulin-like growth factor I (IGF-I) administered by injecting small amounts into healing tendon tissue over a 10-12 day period. In the future, IGF-I may be able to be triggered by gene expression techniques being currently developed for horses following tendon injury, and this would be a great benefit in rehabilitation.

**There is now a much better understanding of tendon structure and many more new ways to manage tendon injuries to help ensure a horse can return to athletic activity. However, the slow healing rate of the tendon structure often requires an extended time of 6-9 months lay off from training to ensure the best long term chance of full recovery.** Exercise to progressively load the recuperating tendon(s) is paramount to the long term success of tendon rehabilitation.

## HANDY HINT

**Tendon Strain Related to Conformation.** If a horse has low heels, long sloping pasterns or has a conformation problem of "cut back onto the tendon behind the knee", there will be a higher risk of recurrence of overloading even properly healed tendons during high speed exercise.

# 10

## HANDY HINT

### Elevated Bicarbonate ( $\text{HCO}_3^-$ ) Readings.

Even if bicarbonate or a muscle buffer is not added to the feed, or bicarbonate is not used in pre-race drenches, elevations above 34 mmol/Litre to the limit for racing horses can occur as a result of high chloride loss due to sweating in training, hot weather or when travelled over long distances to race in a 'nervy' horse, resulting in a compensatory increase in blood bicarbonate (termed hypochloreaemic alkalosis) – common in harness horses that usually have a resting  $\text{HCO}_3^-$  of 30-32 mmol/L. Discuss any elevations with your own vet.

# 11

# PRODUCT OF THE MONTH

## Kohnke's Own Cell-Iron®



### Iron Supplement for Athletic Horses

Kohnke's Own **Cell-Iron** is the only pelleted iron supplement in the world and makes supplementing iron easy and convenient – **no fiddly sachets, no dust, no sift-out, no sludge from liquid iron sediment in the feed bin and no risk of interaction with Vitamin E.**

**Cell-Iron** contains 3 sources of iron for optimum uptake, as well as Vitamin B12 and folic acid and coated (protected) Vitamin C to assist iron uptake. Each 20g measure provides 320 mg of iron, 320 µg Vitamin B12 and 12mg folic acid to make up shortfalls in the diet and iron lost in sweat (23mg/L of sweat) in hot weather (or jogging in harness horses).

**Cell-Iron Supplet®** pellets can be mixed into the same feed as Vitamin E (and Vitamin C) as the pellets are spaced throughout the feed and consumed separately to these iron sensitive vitamins.

**Cell-Iron®** is available in 1.2kg (ideal pre-race pack), 3.5kg and a new 10kg pack (500 doses) for larger stables.

## HANDY HINT

**Cell-Iron®** is an ideal supplement of iron to give prior to racing to assist muscle oxygen carrying pigment (myoglobin) levels – simply add 1 scoopful on the last 2-3 evenings prior to racing. It has more iron and is cheaper than old-time iron sachets.

## HANDY HINT

**Elevated GGT.** GGT is an enzyme that rises due to liver 'stress' or toxic reaction. Normal readings are usually 15-50 U/L, decreasing in older horses, but some horses consistently have up to 80U/L and perform well. Elevations of GGT alone above 80U/L can be caused by sudden introduction of oils (fats) to the diet, selenium deficiency, or intake of mouldy hay or grain that indicate toxic liver insult. Combined bilirubin and GGT increases, with low red cell count, Total Protein and potassium levels are often caused by blood loss – 'bleeding' or gastric ulcers. Consult your vet for a diagnosis.

### In the next Issue

- **Handling the Unsettled Racehorse** – Some helpful advice.
- **Hyperbaric Medicine** – does it work?
- **Energy** – Keep the 'tanks' full!
- Plus Handy Hints and lots more!

### Disclaimer

The information and recommendations in this newsletter have been presented as a guideline based on the veterinary experience and knowledge by the author, Dr. John Kohnke BVSc RDA. Whilst all care, diligence and years of practical experience have been combined to produce this information, the author/editor, Dr. John Kohnke, accepts no responsibility or liability for unforeseen consequences resulting from the hints and advice given in this newsletter. **The information contained in this newsletter is copyright. We encourage its use in club information sheets or other newsletters, on request, as long as acknowledgement is given to the author and its source from this newsletter.**

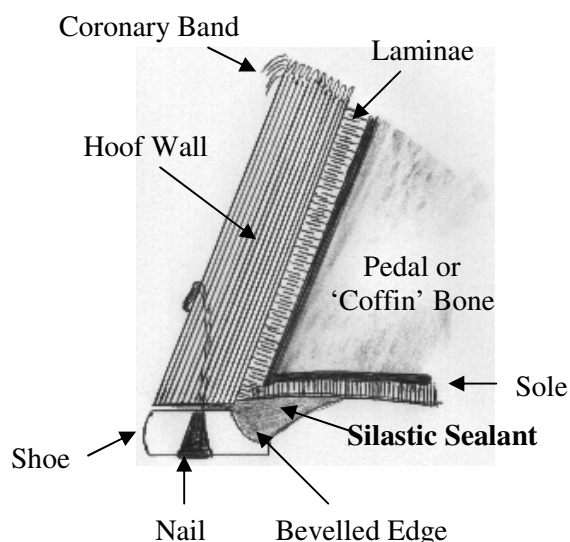
## Bevelled Shoes and Silastic Sealant Anti-Concussion Shoeing

Reducing concussion on hard tracks, in horses with either flat (dropped) soles, pedal osteitis, corns or heel compression can help maintain soundness and comfort during training and racing. For many years, I have recommended fitting bevelled shoes with Silastic sealant to help reduce pressure and concussion on the sole and underlying pedal bone around the inside edge of the white line.

Many horses with a choppy, scratchy stride due to sore, bruised toes and pedal bone edges, as well as recurring corns, will usually trot off sound after the modified shoes are fitted.

### 8 Simple Steps

1. Trim the hoof, leaving as much hoof wall above the sole as possible and remove excess dry sole around the edge of the white line.
2. Grind a bevel around the inside top edge of the shoe with an angle grinder, leaving enough outer edge to cover the thickness of the hoof wall. (O'Dwyers make various Sole Relief Shoes with a rebated edge for this purpose).
3. Clean the hoof thoroughly, position and nail the shoe in place.
4. Clean around the inside edge under the upper edge of the shoe and sole with methylated spirits to remove grease and moisture. (DO NOT SMOKE !)
5. Dip your index finger into a small amount of washing up detergent to prevent the sealant sticking to your finger (or use gloves). Squeeze the tube of Silastic sealant to deliver a thin bead to fill in the gap between the shoe and sole (as illustrated). Force the sealant into the gap by running your index finger around the level. Repeat until the gap is full.
6. Smooth and "batter" off onto the sole.
7. Stand the horse on a concrete surface, or wrap the hoof in a layer of kitchen film (eg Gladwrap®) for 10 to 15 minutes to keep the sealant clean while it cures – a rapid cure sealant is now available.
8. The sealant will prevent sand forcing its way under the edge of the shoe to provide relief from concussion and sole pressure, and it will normally remain anchored on until the shoes are changed. **At this time, racing in bevelled shoes prepared in this way is not approved.**



**Cross-section of Hoof Wall and Shoe**