

EQUINE[®]NEWS



**Kentucky
Equine
Research**
INCORPORATED
A U S T R A L A S I A

**KER Readies for
Olympic Effort**

Nutrition of the Stallion

Greasing the Joints

Look no further for a top-quality horse feed or supplement



Capstone Horse Feeds

PO Box 101
Hillcrest 3650
South Africa
Ph 27 (31) 767 1093
Ph 27 (31) 767 1094
www.capstonehorsefeed.com
enquiry@capstonehorsefeed.com



Milne Agrigroup PL

103-105 Welshpool Rd.
Welshpool, WA 6106
Australia
Free Phone 1800 199 574
Fax 08 9351 0705
www.milne.com.au
pegasus@milne.com.au

Ridley Agriproducts PL

70-80 Bald Hill Rd
Pakenham VIC 3810
Australia
Sales 1300 666 657
Technical 1800 133 868
www.ridleyhorse.com.au



NRM NZ

100 Carlton Gore Rd.
Newmarket, Auckland
New Zealand
Free Phone: 0800-800-380
Free Fax: 0800-699-799
www.riding-room.co.nz
gretel.webber@nrm.co.nz



Al Hamid Group

PO Box 46468
Abu Dhabi
United Arab Emirates
Ph 971 2 508 2248
Fax 971 2 558 2293
www.alhamidgroup.com

مؤسسة هملول التجارية

Hamlool Trading Est

PO Box 8348
Dubai
United Arab Emirates
Ph 971 4339 1117
Fax 971 4339 1118
hmlool@emirates.net.ae



Mano Equestrian Services (Pte) Ltd

Block 20 Woodlands Link
#06-32 Woodlands East
Industrial Estate 738733 Singapore
Ph 65 6756-8286
Fax 65 6756-8289
cmano@mbox3.singnet.com.sg



Nutrition Hotline: 1800 772 198

Website: www.ker.com

Email: equivit@ker.com

Research separates the innovator from the imitator.®

EQUINEWS®

VOLUME 7 ISSUE 3

CONTENTS

2
Kentucky Equine Research Feeds
the Champions

4
Gear Up for Warm Weather

7
KER Readies for Olympic Effort

12
Think E for Excellent Nutrition

15
Fly Boys at Work and Play:
Nutrition of the Stallion

18
Greasing the Joints

Equine News Editorial Staff

Editor	Mark Llewellyn
Contributing Writers	Peter Huntington, BV Sc. Sonja Vandermark Cilla Kuiper Catherine Bishop Joe D. Pagan, Ph.D. Larry Lawrence
Art Director	Sheri Wood

Equine News is the award-winning publication of Kentucky Equine Research. Its intent is to present informative and entertaining articles that advance the primary goal of Kentucky Equine Research and its worldwide affiliates—to ensure superior nutrition for all horses and ponies.

Equine News features on its front cover a photograph by Becky Young.

*U.S. subscription price is \$12 per year.
Special thanks to Arrowfield, Coolmore and Darley for supply of photographs for this issue.*



EQUINEWS

Kentucky Equine Research, 3910 Delaney Ferry Road, Versailles, Kentucky 40383, USA. Telephone 859-873-1988. Fax 859-873-1163.

Kentucky Equine Research Staff

President	Joe D. Pagan, Ph.D.
Nutritionists	Kathleen Crandell, Ph.D. Larry Lawrence, Ph.D.
Accounting	Claudia Lau
Formulation and Quality Assurance	Mike Lennox, PAG.
IT Specialist	Brian Lauer
Marketing & Web Specialist	Susan Hammonds
Marketing Assistant	Linda Tate
Research Farm Manager	Delia Nash
Technical Support Specialist	Theresa Weddington
Technical Division Coordinator	Eileen Phethean
Visiting Interns	Louise Tuininga Whitney Jones

Kentucky Equine Research Australasia Staff

Kentucky Equine Research Australasia
112B Martin St., Brighton 3186, Victoria, Australia
Telephone 03 9530 6334, Fax 03 9530 6339
Nutrition Advice Hotline 1800 772 198
www.ker.com, equivit@ker.com

Director of Nutrition	Peter Huntington
Nutrition Advisors	Graham Jenkinson Cilla Kuiper Kerrie Leech Megan Luckhurst Jasen Bennett
Nutrition & Technical Advisor	Sonja Vandermark
Marketing Director	Emma Roberts
Marketing Specialist	Kim Oldfield
Finance Director	Ross Graham
Business Administration	Joanne Read

Kentucky Equine Research International Staff

Kentucky Equine Research International
P.O. Box 808, Versailles, KY 40383 USA
Telephone 859-873-3390, Fax 859-873-3781

General Manager	Florencia Arrambide
Office Manager	Jill Hutchinson

Kentucky Equine Research Feeds the Champions

EVENTING. Australia has won the team gold medal at the past three Olympic Games, setting an Olympic record. Currently, Australia is in the envious position of having a great depth of horses and riders available for selection, making the job of choosing the Australian team difficult.

A team of five riders and six reserves was announced on June 29. The Australian team includes KER-associated riders Olivia Bunn and Phillip Dutton. Veterans Andrew Hoy and Stuart Tinney have also been named to the team, as has rising star Rebel Morrow.

Olivia makes her Olympic debut in Athens, having been a reserve at the 2000 Sydney Olympic Games. As a 19-year-old, she placed seventh in the 1998 World Equestrian Games (WEG), and was also the highest placed Australian at the 2002 WEG. As part of her Olympic qualification, Olivia won the New Zealand Three-Day Event Championships at Taupo in May. In a thrilling finish, Olivia edged out local favorite Matthew Grayling riding his Olympic mount Revo, with just one showjumping fence to spare. Grayling is supported by NRM, KER's Team Member in New Zealand, making the end result a KER-related quinella!

Olivia has been an ambassador for KER since the Sydney Games and is a valued client of KER Team Member Ridley AgriProducts, feeding its concentrate sweet feed StableMaster PharLap.

Phillip Dutton hails from Nyngan, NSW, but is based in Pennsylvania, USA. Phillip's decision to avoid the mud at the Badminton Horse Trials and achieve Olympic qualification at the Rolex Kentucky Three-Day Event paid off handsomely. He placed second in the CCI**** with Nova Top and second in the Olympic-format modified CCI**** riding Hannigan. In 2003 Dutton and Nova Top won the Foxhall Cup CCI*** (Georgia, USA) and were second in the Blenheim CCI*** (England). Phillip was a member of both the 1996 and 2000 gold medal-winning Australian eventing teams and has been named leading rider of the year by the United States Combined Training Association five times in the past six years. Phillip is a KER ambassador and a longtime customer of KER Team Member Pennfield Feeds.

New Zealand has also named its Olympic three-day eventing team. The team blends experience with new talent and includes such luminaries as Blyth Tait and Andrew Nicholson, seasoned campaigner Dan Jocelyn, and young Heelan Tompkins, who was first reserve for the Sydney Games. The team also includes Matthew Grayling, the only member who has based his campaign from New Zealand. Matthew won the prestigious Adelaide Four-Star Horse Trials in 2001, and has competed solidly in New


Zealand this season. Matthew is from Okato, Taranaki and feeds NRM Run Free and Equi-Jewel.

DRESSAGE. Australia has secured two positions for Dressage representation at the Athens Olympic games. Top-ranked Australian dressage rider, Ricky Macmillan and her horse Crisp have been selected to fulfil one position. Ricky and Crisp represented Australia at the 1998 & 2002 World Equestrian Games and 2000 Olympics and are co-sponsored by KER and Team Member Ridley AgriProducts.

ENDURANCE. Globe-trotting KER ambassador Meg Wade finished fourth in the 120-km FEI Endurance Ride at Monpazier, France on June 19, riding her own horse, Cloud Doll. Meg's average speed was 18.65 kph, with the winner's average speed 18.87 kph. Meg said the race leaders went very fast over the last leg, suffering the consequences of several disqualifications due to lameness. Meg uses feeds formulated by Dr. Bill Harbison and manufactured by Ridley AgriProducts for those breeding and competition horses in Australia.

PARALYMPICS. Equestrians representing Australia at the Athens Paralympic Games have been announced and KER is pleased that KER ambassador Marita Hird has been selected. Marita is busy preparing for Athens by practicing on her borrowed mount, Special Edition 68, kindly loaned by Trina Gibson. Marita won a bronze medal at the Sydney Paralympics.

WARMBLOODS. Victorian warmblood stud Belcam International, a Ridley AgriProducts customer, held its second annual performance horse sale in early June. The auction was a huge success with 20 of the 21 offered horses selling for an average price of \$12,500. Fifteen of the lots were sired by Belcam's resident stallion Capone. The nutrition program at Belcam was designed by KER nutrition advisor Megan Luckhurst. Megan has developed a feeding system for Belcam that is based around Ridley's concentrate feed StableMaster Legend and a custom-made balancer pellet that is also manufactured by Ridley. In addition, Megan monitors the growth of the young horses throughout the year and keeps a close watch on pasture quality.

Three-day event rider David Middleton purchased six horses at the sale. David is also sponsored by Ridley AgriProducts 

Fuelling Champions Across the Globe

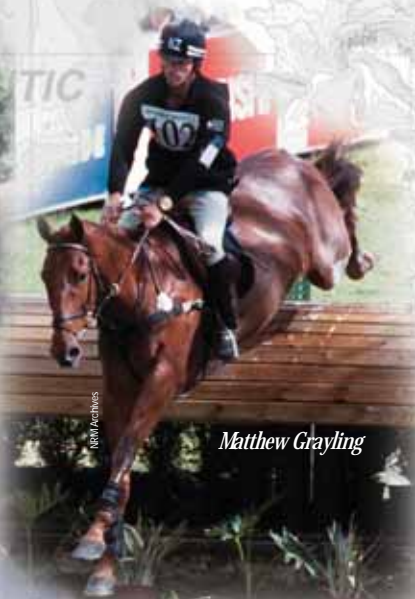
Kentucky Equine Research proudly congratulates its Team Members for supplying feed to these riders selected for Olympic competition.



Phillip Dutton



Olivia Bunn



Matthew Grayling



Ricky MacMillan



Marita Hird

Marita Hird - Australia
Member of Equestrian Team for Athens Paralympic Games
Fuelled by KER

Phillip Dutton - Australia
Member of Eventing Team for Athens Olympic Games
Fuelled by Pennfield

Matthew Grayling - New Zealand
Member of Eventing Team for Athens Olympic Games
Fuelled by NRM

Olivia Bunn - Australia
Member of Eventing Team for Athens Olympic Games
Fuelled by StableMaster

Ricky Macmillan- Australia
Member of Dressage Team for Athens Olympic Games
Fuelled by StableMaster



Changing seasons offer nutritional challenges for horse owners. As winter wanes and summer approaches, horsemen must recognise that changes in pasture growth may ultimately affect the way they feed their horses.

As the grass brightens from brown to green, the nutrient content of the plant changes considerably. Horses will undoubtedly relish in the newfound forage, but care must be taken to allow only the amount of grazing time necessary to sustain optimal body weight. If horses are allowed unchecked access to spring green pick, they can quickly become overweight and have increased likelihood of scouring or even laminitis. The perils of obesity include decreased stamina and a greater likelihood of unsoundness.

Gear Up For Warm Weather

Several management strategies can be put into place for the voracious eaters in a herd. One of the easiest ways to manage such horses is to limit their time in lush pastures by placing them in stables or yards for a significant part of the day (12-16 hours). While in confinement, horses should have something to munch on, preferably low-energy forage such as grass hay.

When left with nothing to eat for hours at a time, horses become predisposed to gastric ulcers and may develop oral vices such as wood chewing and cribbing, due to boredom or lack of fibre intake. Limited confinement may be the option of choice for performance horses that are starting back into work after a winter's break. Not only will confinement keep calorie intake in check, but midday stabling helps horses maintain deeply coloured coats.

If an enclosure is not available, a horse may be outfitted with a grazing muzzle. Most muzzles are made of nylon or leather and attach directly to the halter with plastic clips. A hole cut in the floor of the muzzle allows constant, though minimal, forage intake.

Grazing muzzles should be checked daily, however, to ensure they are not rubbing and causing sores. If a rubbed area is found, adjust the muzzle and recheck it daily. Be sure to inspect under the noseband of the halter, as the weight of the muzzle can sometimes cause chafing on the bridge of the nose. If the muzzle is not rubbing other areas, a fleece tube with a Velcro enclosure can be laid over the noseband, and the loops of the muzzle can then be fastened over the fleece-covered noseband.

Strip grazing or compartmentalising of paddock space using temporary fencing is also a great way to restrict pasture access and give a portion of the paddock a rest from intensive grazing.



Mark Llewellyn

Owners should monitor the weight of their horses carefully. With access to calorie-dense pasture grasses, winter grain meals may have to be reduced or cut out altogether. Depending on the amount of work the horse is asked to do, an all-purpose vitamin and mineral supplement pellet (Gold Pellet, Kentucky Equine Research, 1-800-772-198) may be all that pastured horses require. Horses in intense exercise or those with extreme energy needs (mares in late gestation or early lactation) may benefit from lush pasture with additional grain meals.

Spring Pasture, Too Much of a Good Thing?

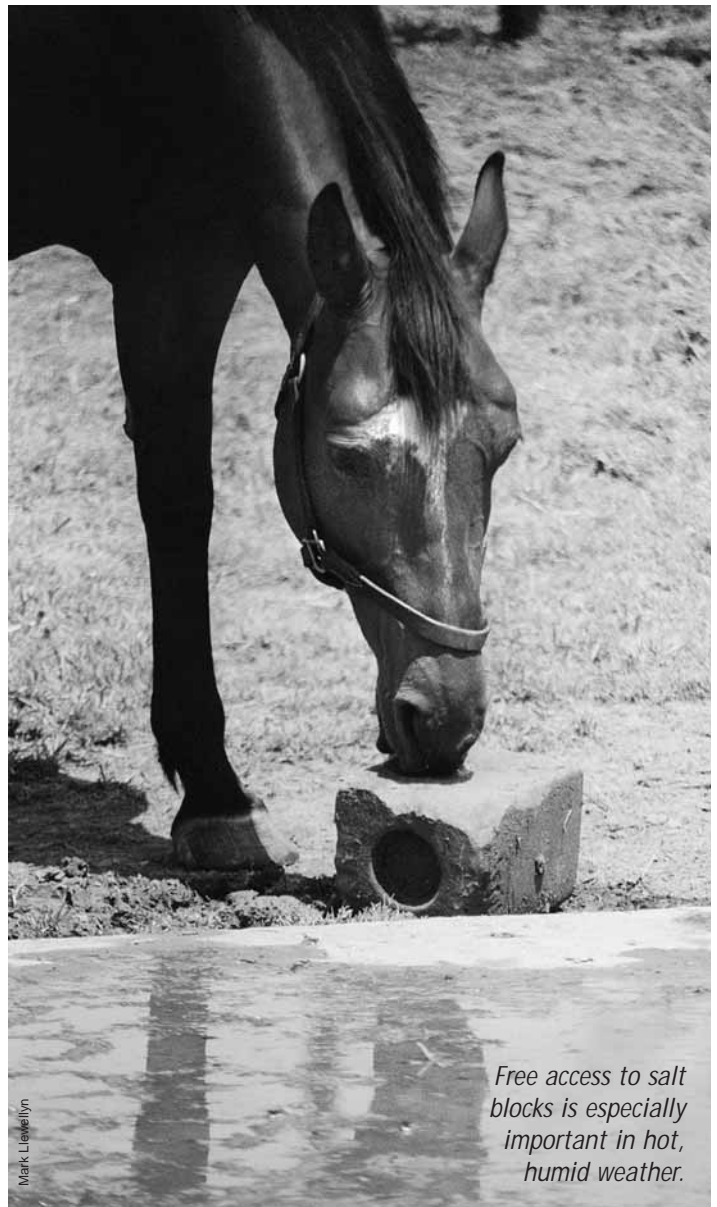
Unrestricted access to high-quality pasture has risks. The foremost danger is laminitis, commonly called founder. The mechanisms that produce laminitis are complex and thought to be centred on starch overload and, with some grass varieties, fluctuating sugar levels. Once a horse or pony has survived an initial bout with laminitis, it is more susceptible to relapses.

Colic is another springtime concern. Horses that remain on pasture continually from winter to spring will likely not have a problem with the changing nutrient dynamics of the grass. Colic is primarily a problem with horses that are placed abruptly on succulent pasture with no time for their digestive systems to adjust accordingly.

Lush grass may not be the only thing growing in your pastures; unwanted vegetation including poisonous plants may take root in paddocks, leaving horses vulnerable to their often lethal side effects. Horses will generally bypass poisonous plants when more palatable plants are available, so few noxious plants are ingested in spring. If a summer drought should set in and pasture quality diminishes, horsemen may find their equine companions munching down on some unusual flora. If poisonous plants are thought to be growing in a pasture, horses should be removed from the area until plants can be completely eradicated. A pasture management expert such as an agronomist (contact your local DPI) can help owners canvass fields for unwanted plants and offer advice on safe, appropriate herbicides.


Don't Forget Salt and Water

Horses must continue to have access to fresh water during periods of turnout. This is particularly important as spring segues into summer and the chance of dehydration, even in idle horses, increases. Water tubs should be dumped, scrubbed, and refilled often so algae does not accumulate and mosquitoes and other insects do not have the opportunity to lay eggs. The bowls of automatic waterers should be scoured frequently, too.



Free access to salt blocks is especially important in hot, humid weather.

In addition to free-choice access to water, a salt block should be available for consumption by horses at any time. White salt blocks (which contain sodium and chloride) and reddish-brown salt blocks (often called trace-mineralised blocks, which include sodium, chloride, and several trace minerals) are the best choices for horses. Feed stores often carry many different types of block, some for horses, and some for cattle, sheep and goats. Whilst many of these blocks will be fine for horses, some contain added ingredients which can be very dangerous for horses. Check with your feed merchant before buying a block that is not specifically designed for horses.

For horses that sweat considerably from exercise during spring and summer, oral electrolyte supplementation may be in order. For more information on electrolytes, contact Kentucky Equine Research. 

Digging Deep?



Nutritional Support

Glucos-A-Flex™

A nutraceutical formula of glucosamine with antioxidants, vitamins, amino acids and minerals.



**Kentucky
Equine
Research**
INCORPORATED
AUSTRALASIA

1800 772 198
equivit@ker.com
www.ker.com

KER Readies for Olympic Effort



The idea is simple:

Supply only the best for the best.

Hay and straw from the United States.

Chaff and haylage from England.

Oats from Canada.

Wood shavings from Germany.

Feed and supplements formulated by

Kentucky Equine Research (KER)!

On Approach to Athens

Caretakers of Olympic-calibre horses demand their charges receive the best feed, forage, and bedding, and KER was selected by the Athens 2004 Organizing Committee (ATHOC) to be the official supplier of these items for this year's Olympic Games, to be held August 13-29, and the Paralympic Games, to be held September 18-28. The XXVIII Olympiad is returning to its birthplace; the first modern Olympics was contested in Athens in 1896, more than 100 years ago.

Involvement in Olympic endeavors is not foreign to KER. The company served in a similar capacity during the past two Olympic competitions in Atlanta (1996) and Sydney (2000). Because of its experience, KER has a deep understanding of the expectations that will be placed upon it. With this in mind, KER has secured the highest quality feeds, forages, and bedding available in the world.

The equine nutritionists at KER formulated three feeds specifically for the Olympics. Two of the feeds are museli-style sweet feeds, and the other is a pelleted feed. Each of the feeds bears the prefix Markopoulo, which is the name of the village where all of the equestrian competitions will take place.

Markopoulo High Performance Mix and Markopoulo Cool Mix are the sweet feeds. Markopoulo High Performance Mix is a mixture of three steam-processed grains—oats, corn, and barley—combined with vegetable oil and molasses. A low-inclusion vitamin and mineral pellet provides the micronutrients required by the high-performance horse.

Markopoulo Cool Mix is designed for horses that do not require a highly concentrated source of energy. The feed does not contain oats and supplies a majority of its calo-

ries from non-sugar energy sources such as fermentable fibre (beet pulp and soy hulls) and fat (vegetable oil). The same vitamin and mineral fortification included in Markopoulo High Performance Mix is used in Markopoulo Cool Mix. Because of the ingredients selected for this feed, it is ideal for horses that become excitable on traditional cereal-based feeds.

Markopoulo Performance Pellets are a blend of high-fibre ingredients that furnish the energy and micronutrients required by hardworking horses. The formulation includes lucerne meal, soy hulls, mill run, and ground corn.

In addition to these three feeds, KER has arranged with several of its Team Member feed manufacturers to provide KER-formulated mixes for equine athletes, if requested. Team Members engaged in this include Pennfield Feeds of Pennsylvania, USA; Saracen Horse Feeds of Kent, England; Ridley AgriProducts of Australia and Bluegrass Horse Feeds of Co. Tyrone, Ireland.

While the majority of horses competing will fuel their performances with a fortified feed such as a sweet feed or pellet, there are those riders that prefer to feed straight grains. The crimped oats available in Athens will be provided by Champion Oats Processors, a company that purchases oats grown throughout Canada, and then processes, markets and ships oats of all kinds—racehorse oats, double- and triple-cleaned oats, and oat groats—under the Northern Elite brand.

Champion Oat Processors' new state-of-the-art processing plant was built in 1995. Modern cleaning and bagging equipment allow the company to consistently supply a high-quality, nutritionally superior product.

Several other processed grains will be available, including steam-flaked barley, SuperFlake® corn, and cracked corn.



Markopoulo Olympic Equestrian Centre

KER's work begins and ends at Greece's Markopoulo Olympic Equestrian Centre. Located on Kefalonia, the largest island of Ionian Greece, Markopoulo is situated in the east Attica region of the country.

The equestrian complex, built specifically for the 2004 Games, will play host to all of the equestrian disciplines—dressage, three-day eventing, and show jumping. The venue is enormous, covering more than 940,000 square meters, and includes practice and show arenas, stabling for 300 horses, expansive parking areas, permanent and temporary viewing stands, and an internal road system.

Teams of KER employees will be in Athens to make sure the distribution of products is accomplished smoothly. Joining the staff from KER's American office will be Joanne Read, Emma Roberts and Jeff Day from KER's Australasian office in Melbourne and Fionna Deppeler from Team Member Ridley AgriProduct's Pakenham office. Officials from the various countries are responsible for ordering all feed, forage and bedding. Once the order has been received, KER will process it and deliver the merchandise to the desired location.

Special consideration has been given to storage of the products once they arrive in Greece. Grain will be stored in a refrigerated enclosure to ensure its freshness, and hay, straw, and chaff will be placed in clean, dry areas. All of the products will remain under the surveillance of KER employees, as they will have been previously tested by an independent laboratory in Paris, France for substances prohibited in international equestrian competition, as outlined by the Fédération Equestre Internationale (FEI). The FEI ensures that all horses and riders compete on a level playing field.



The Markopoulo Olympic Equestrian Centre features 300 permanent stalls.

Wheat bran, shredded beet pulp, and linseed meal (flax) will also be on hand.

KER found the world's best hay in the Pacific Northwest region of the United States. This area of the country is famous for its high-quality forages. The supplier for the Games, Anderson Hay & Grain Company, located in Washington, is the region's leading supplier of premium hay to horsemen around the globe.

Anderson Hay & Grain began marketing forages to livestock producers in the 1940s. As the reputation of its products spread, Anderson Hay & Grain found itself with an international clientele. For the Athens Games, the company will provide timothy grass hay and lucerne. By nature, timothy hay is typically low in protein, but Anderson Hay & Grain's timothy is top-drawer forage—a clean, completely dust- and mould-free source of fibre. Unlike grass hays produced in most areas of the world, this timothy is bright green and quite aromatic.

The lucerne hay stocked by Anderson Hay & Grain, on the other hand, is rich in protein, containing more than 20%. In comparison with the timothy hay, the lucerne is low in fibre. The hay is also extremely palatable.

Though its use is not widespread in Australia, haylage is a common feedstuff in other areas of the world. Haylage is similar to hay, but instead of being allowed to dry completely prior to baling, it is preserved when the plant life has wilted and dry matter content is approximately 55%. In optimal drying conditions, this takes approximately 24 hours. Hay would require more extensive drying time.

Once taken from the field, the bales are compressed to half their original size and packed in double-skinned or two-ply plastic bags. The heat-sealed bags encourage fermentation, thus preserving the forage. This specialized preservation



Athens visitors will see many ancient architectural sites such as the Erechtheion, built to honor the founder of Athens.



Dressage is one of the disciplines that will be showcased at the Olympic Games.

method allows the haylage to retain approximately 90% of the feed value of fresh grass without the use of preservatives.

The haylage offered in Athens will be made from premium ryegrasses that have been cut at an early growth stage to ensure optimum protein and energy levels. A high-fibre haylage will also be on site, should horsemen prefer to feed it. The high-fibre haylage is made from plants that are allowed to mature slightly before harvesting, thus upping the fibre content and lowering the protein and energy composition.

Mark Westaway & Son will provide haylage to the horses competing in Athens. Sold under the brand name HorseHage, the haylage product is the world's leading dust-free bagged forage.

HorseHage products have been particularly beneficial to horses with respiratory problems. In fact, special recognition, called a Royal Warrant, was bestowed upon Mark Westaway & Son following the successful use of HorseHage on one of Queen Elizabeth's horses.

Like KER, Mark Westaway & Son has ties to past Olympic Games. The company provided HorseHage to members of the British Equestrian Team that competed in Los Angeles, Seoul, Atlanta, and Sydney.

Another form of forage popular in Europe and Australia is chaff or chopped forage mixed with molasses. For the 2004 Olympics, chaff will be provided by Dengie Crops Limited, a company based in the United Kingdom. Dengie is the United Kingdom's leading producer of lucerne, and this lucerne is the primary ingredient used in the production of their popular range of fibre-rich feeds. Dengie will provide two standard products, Dengie Alfa-A and Dengie Hi-Fi Lite. Several other Dengie products will be available by special order.

Also available to riders will be several of KER's supplements, including Elevate, Restore, Preserve, Endura-Max Plus, Equi-Jewel, Bio-Bloom, and Neigh-Lox. For more information on these products, go to ker.com.

Once KER found the best forages and feeds for the horses, the staff turned its attention to locating superior bedding materials. Again, KER called on Anderson Hay & Grain to supply bright, clean straw for the Olympic Games. Horses may also be bedded down on wood shavings furnished by Allspan, Europe's leading manufacturer of wood shavings. Allspan shavings are made from untreated whitewood, primarily pine and fir. The wood undergoes a special drying process, which makes the shavings extremely absorbent and free of dust.

Within Australia, KER is also taking an active role in assisting team riders to prepare for the journey to Athens. KER and Ridley AgriProducts (RAP) are the joint official equine nutritionists to the Australian Equestrian Team.

Spotlight on Phillip Dutton

Phillip Dutton hails from a sheep and wheat farm in Nyngan, outback NSW. In 1991, he moved to the U.S. to train for the 1996 Olympics in Atlanta, at which he was a member of Australia's gold medal-winning three-day event team. Phillip has been on every Australian three-day event team to compete internationally since the World Equestrian Games in 1994. He also secured a team gold medal at the 2000 Sydney Olympics. With his wife Evie, Phillip manages True Prospect Farm in West Grove, Pennsylvania USA. Phillip is a valued client of KER Team Member Pennfield Feeds and an ambassador for KER.

"My day usually starts at the barn at 8:00 a.m. The girls that work for me feed the horses at 6:30 a.m., then start turning out and mucking out stalls, of which there are 52 when we are full!

"I go to my office first, to write up the training list for each horse and to make some phone calls to clients. I am usually on my first horse by 8:30 a.m. and I ride until approximately 1:00 p.m., depending on the day. I am fortunate to employ several capable riders to do the fitness work and hacking so I can concentrate on dressage and jumping.

"The rest of my day is devoted to teaching. I have students who board at my farm and train with me, and then many who keep their horses elsewhere."

Phillip is dedicated to encouraging up-and-coming riders, and has been involved in scholarship and coaching programs. He spends many weekends conducting clinics all across the U.S., and is committed to coaching his many adult amateurs and working students.

"I rely heavily on the KER products, especially the electrolytes (Restore) and Myo-Guard (Preserve in Australia). I find these particularly beneficial in keeping my horses in peak shape during intense training regimens and busy competition schedules."

Recently, Dr. Peter Huntington of KER and Ms. Elizabeth Owens of RAP attended the last official training camp for Australian-based members of the Olympic eventing team. These team members depart for England on July 17, to join the remainder of the team in a training camp to be held at the property of Australian-born, UK-based eventing rider, David Green.


Some of the feeds and supplements used in Australia are not available in England, so KER and RAP are able to assist the selected riders by advising changes to their feeding programs required for travelling to England and then Greece. These alternative diets are carefully balanced to ensure the supply of all nutrients required for peak performance, but with minimal changes in the ingredients used.

As part of the service to the Australian Equestrian Team, RAP has arranged a supply of its feed, StableMaster PharLap, for Olivia Bunn's Top of the Line and Ricky Macmillan's Crisp, during their stays in England, Germany and Athens. RAP also supplied StableMaster Cool Command to Wendy Schaeffer during her recent trip to compete in the UK.

KER's global network of Team Member feed manufacturers extends almost right around the world. Australian

eventing rider Phillip Dutton uses feeds manufactured by KER Team Member Pennfield Feeds at his home base in Pennsylvania, USA. Pennfield has arranged to supply feed for Phillip while at the training camp in England and also during the Olympics.

Matthew Grayling is a member of the New Zealand Olympic Eventing Team and uses feeds manufactured by KER Team Member NRM New Zealand for his mount Revo. Matthew was able to introduce the international feed, Race 13, into Revo's diet prior to his departure from New Zealand. Race 13 is manufactured by a number of KER Team Members in different countries, and thus enables the jet-setting performance horse to maintain the same diet throughout its travels. Riders are also able to obtain familiar KER supplements, distributed in Europe through KER Team Members.

Nutrition is only one aspect of peak performance, but Olympic riders leave nothing to chance. KER is proud to be entrusted with the vital roles of nutrition consultants to the Australian Equestrian Team and supply of the feed, forage and bedding to a handful of the world's greatest equine athletes. 



Becky Young

THINK E FOR

Excellent Nutrition

Vitamins are often clumped together as a single entity, and the contributions of individual ones are sometimes overlooked. In recent years, scientists have been taking a closer look at vitamin E. Though the nutrient was first discovered more than 80 years ago, the scientific community continues to find new uses for this much-heralded vitamin.

The far-reaching effects of vitamin E in equine nutrition are well known. Vitamin E plays vital roles in immune, cardiovascular, circulatory, neuromuscular, and reproductive functions.

All Vitamin E Created Equal?

The vitamin E family is extensive. Eight compounds have been identified; they are categorized as either tocopherols or tocotrienols. Fresh forages and grains consumed by horses usually include the eight compounds in sufficient quantities to maintain health; supplements, however, typically contain just one, alpha-tocopherol. Alpha-tocopherol is the most familiar of the octet because of its abundance in the horse's body.

Natural and synthetic alpha-tocopherol are not molecularly identical. Each molecule in natural vitamin E is alike, whereas synthetic vitamin E contains a mixture of eight molecules. Only one of these is identical to the natural form. The other seven do not exist in nature and thus are purely man-made.

Natural alpha-tocopherol is extracted from a by-product of vegetable oil processing. One of the final steps of refining food-grade vegetable oil is deodorization, a process that strips the oil of undesirable flavours. The by-product, called deodorizer distillate, is collected during soy oil, corn oil, and canola oil purification. The amount of natural alpha-tocopherol harvested from distillates depends largely on the raw product.

A Superior Source

Aside from structural differences, there is a disparity in the potency of natural and synthetic alpha-tocopherol. Natural forms of alpha-tocopherol have superior bioavailability, being more highly digestible and preferentially metabolised by horses. Moreover, natural alpha-tocopherol is retained in tissues for longer periods of time, creating a reservoir that allows it to be instantly available when horses need it most, namely in times of stress or during periods of confinement.

How does a savvy shopper differentiate between natural and synthetic alpha-tocopherol when looking at the labels of nutritional supplements? Natural alpha-tocopherol is designated by a d (d-alpha-tocopherol) on labels, and synthetic is designated by a dl (dl-alpha-tocopherol). In some instances, a product may not have a designation. If this is the case, assume that the alpha-tocopherol therein is syn-

thetic. Because natural alpha-tocopherol is more expensive than synthetic, manufacturers will usually tout the inclusion of natural alpha-tocopherol on the packaging.

If natural alpha-tocopherol is superior to synthetic, why would manufacturers bother with the latter? Supply and demand dictate the production of natural alpha-tocopherol; there is only so much deodorizer distillate from which to extract the product. No such constraints surround synthetic alpha-tocopherol production.

Water-Soluble Is Best

Vitamin E supplementation is of little value if the nutrient is not transferred efficiently from the gastrointestinal tract to the target organs. Most vitamin E supplements are powders or granules that are top-dressed onto grain meals. When issued in this way, the gastrointestinal tract must first break down the vitamin E before it can be absorbed and carried by the bloodstream to its final destination. Absorption can be accelerated if a water-soluble product is used.

For What Horses?

Because of vitamin E's influence on nearly all body processes, horses of all ages can benefit from supplementation, particularly if they do not have regular access to green pasture.

Horses at Maintenance

Vitamin E supplementation is essential for horses that are not allowed to graze. The vitamin E content of dried forages such as hay is severely diminished, with forages often losing 75% or more of their vitamin content upon harvesting and storage. Therefore, supplementation with

vitamin E is most crucial during the winter when horses are fed diets almost exclusively composed of preserved forages. Inadequate fortification of textured feeds or the feeding of straight grains (oats, for example) may also contribute to vitamin E deprivation. Supplementation may be indicated year-round for racehorses and performance horses confined to stables.

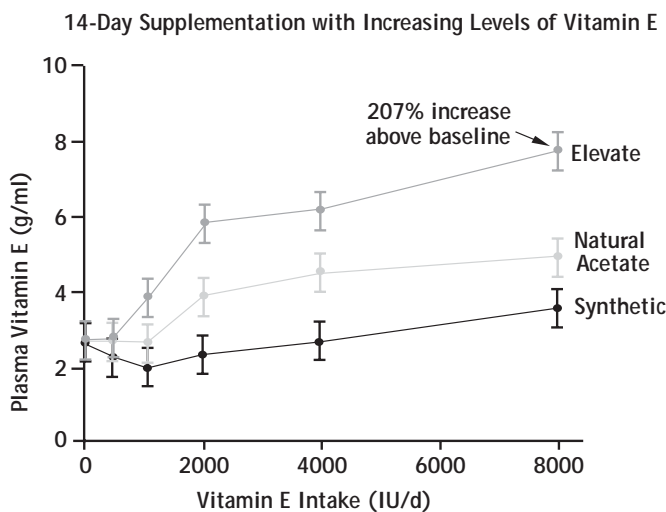
Performance Horses

Vitamin E is an essential component to body-wide antioxidant defences, with one of its most important duties being cell membrane maintenance. Cell membranes are composed largely of unsaturated lipids and are therefore vulnerable to assault by free radicals, compounds that can irreparably damage cell membranes.

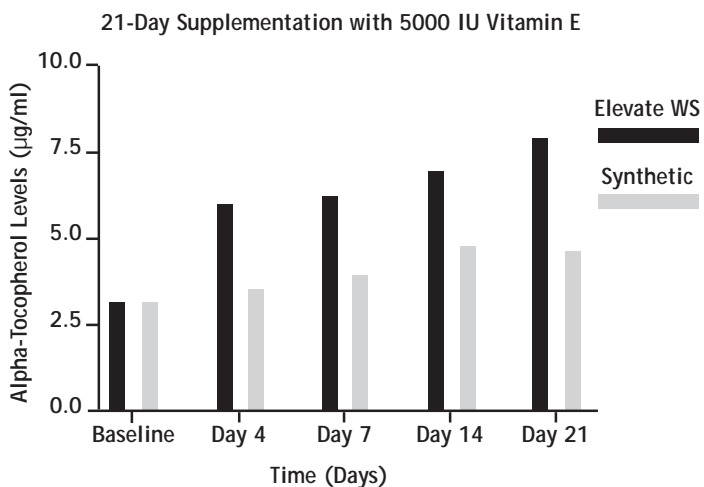
As athletic effort increases, free radical production flourishes and natural stores of antioxidants have difficulty providing sufficient protection against the flood of free radicals generated. Supplementation is therefore necessary to help ward off the ill effects of mass-produced free radicals associated with intense exercise. Horses with an inadequate reserve of vitamin E may experience muscle soreness or stiffness during an exercise bout and prolonged recovery following strenuous work.

Breeding Horses

Recent research has lauded the use of vitamin E on breeding farms. Mares supplemented with vitamin E have shown increased passive transfer of antibodies to foals, which ensures the strength of the neonatal immune system. Failure of passive transfer leaves foals susceptible to septicemia and bacterial infections. In a study conducted at the University of Connecticut, researchers found that



This study shows that Elevate WS can increase blood vitamin E levels more effectively than synthetic or other natural forms of vitamin E.




This study shows that high doses of Elevate WS can increase blood vitamin E levels rapidly.




Performance horses benefit from vitamin E supplementation because it helps decrease muscle damage caused by free radicals.

mares supplemented with vitamin E had higher antibody concentrations in blood and colostrum than control mares. The concentrations of foals reflected those of their dams, with foals from supplemented mares having increased levels of antibodies.

There is also increasing evidence that vitamin E supplementation may increase fertility in mares. Due to modern management practices, including winter breeding dates, mares may not be receiving adequate vitamin E nutrition through rations composed solely of hay and grain. Supplementation will increase circulating levels of vitamin E and may positively affect fertility, especially in mares with reduced uterine defence mechanisms. Pregnant mares with a history of placental dysfunction may also benefit from extra vitamin E in the last two to four weeks of pregnancy. This supplementation can reduce the potential for hypoxic damage to the newborn foal. Foals suffering hypoxic damage, such as dummy foals, are also candidates for high doses of vitamin E.

Stallions are often given supplements in the hope that they will boost fertility. Stallions suffering sperm motility problems may benefit from supplementation with vitamin E or selenium. Higher blood levels of antioxidants may boost the survival of progressively motile sperm. 



Elevate - Unsurpassed Vitamin E Nutrition

Kentucky Equine Research has propelled vitamin E technology into the millennium with Elevate, a revolutionary liquid vitamin E (d-alpha-tocopherol) supplement. The natural vitamin E in Elevate has undergone state-of-the-art processing that allows it to be converted into a water-soluble molecule that is absorbed efficiently from the digestive system. Because the product is absorbed immediately, the vitamin E in Elevate is dispersed into the blood and to outlying tissues more readily.

Elevate provides 500 IU of vitamin E per millilitre. Under normal circumstances, horses require 500-1000 IU of vitamin E daily. Horses that are stressed, such as those in intense work or in rehabilitation from illness, may require more liberal doses of vitamin E. Elevate can deliver megadoses of vitamin E more effectively than powders and other supplements, and has been shown to boost blood levels within four days of use.

For more information on Elevate, contact Kentucky Equine Research on 1-800-772-198.

Fly Boys at Work and Play: Nutrition of the Stallion

Tobougg

Back in the good old days, wild stallions ran with groups of mares and ranged far and wide in search of feed. Stallions would usually be the fittest horses in the herd as they had to protect their mares from capture by another stallion and guard the herd from various predators. Compare this environment with the life of stallions today. Whilst modern stallions may never go hungry, they are usually confined to small areas, fed two meals a day with only poor-quality pasture to graze between feedings, and are locked away from contact with other horses. Little wonder that some stallions have significant behavioural problems and vices.

Proper nutritional management of the breeding stallion is essential. Breeding stallions are often the most frustrating horses on a farm to maintain at optimal body condition; some become too lean as they run the fence in breeding season, while others remain candidates for the Jenny Craig paddock no matter the season. By providing a carefully balanced diet and monitoring weight regularly, a stallion's waistline can be kept trim and tidy all year long.

For the stallion, the year can be divided into two phases, the breeding season and the off-season.

In the Southern Hemisphere, the breeding season begins the first of September and ends in January. Some stallions pull double duty, servicing a book of mares in the Northern Hemisphere early in the year and a separate group in the Southern Hemisphere later in the year, breeding up to 300 mares annually. Regardless of the number of mares bred, stallions must be properly nourished to perform their jobs successfully.



Nutritional Requirements of Stallions

According to *Nutrient Requirements of Horses*, produced by the National Research Council, breeding stallions expend nearly the same amount of energy as performance horses in light work. This may be elevated when stallions are bred multiple times a day. Stallions also vary greatly in the amount of exercise they give themselves; some are naturally more sedentary than others. During breeding season, nervous stallions may burn valuable calories fence walking and stall circling. Breeding may not be the only work certain stallions perform as some continue to be ridden and trained while performing stud duties. In these instances, energy requirements would be higher still.

Feeding During the Breeding Season

The nutritional requirements of the stallion during breeding season increase but not as dramatically as many people assume. The nutrient requirements are similar to the late pregnant mare or the horse in light work, yet many people feed them as though they were in heavy work.



Rock of Gibraltar

The breeding stallion requires, above all else, a balanced diet. First and foremost, stallions should be provided with high-quality forage, consuming approximately 0.75-1 kg of hay per 50 kg of body weight. A 600-kg stallion should therefore be offered 9-12 kgs of hay daily. The minimum amount of hay offered should be 1% of body weight. Depending upon the size of the stallion paddock and the time of year, good-quality pasture may supply some or all of the stallion's forage needs.

During the breeding season, the addition of energy-dense feeds, usually grains or premixed feeds, may be necessary to satisfy energy requirements for the increased workload of breeding. If you choose to feed grains such as oats, no more than 0.75 kg of grain per 100 kg of body weight should be fed to a stallion per day, and no more than 2.5 kg of grain should be fed per meal. Feeding a mineral and vitamin supplement with grains, either as a home mix or a premixed feed, will help correct the deficiencies of natural feedstuffs and assist in the health and vitality of the stallion.

Some stallion managers choose to feed a premixed feed, which should contain all the vitamins and minerals to balance hay, chaff and pasture. Premixed feeds should be used according to the instructions and the intake adjusted to match the horse's metabolism, body condition and roughage quality.

If the stallion is consuming a well-balanced diet, the addition of other vitamins and minerals will not enhance fertility. Although much information has been bandied about through the years, there is no scientific evidence to suggest that vitamin C and E supplements or zinc additives boost reproductive performance in horses with normal fertility. However, if the stallion has fertility problems related to poor sperm motility, antioxidant supplementation may help.

Feeding Stallions During the Non-Breeding Season

During the non-breeding season the stallion has the same needs as the maintenance mare or gelding. Stallions often hold their condition better than mares or geldings and this can help make up for the increased exercise they take running up and down the fence when other horses are moving by. If pasture quantity and quality is adequate, the stallion may not need any supplementary feed.

In cold weather, hay should be the first-choice supplement to pasture as digestion of the hay produces waste heat, which can help keep the horse warm. During winter in Southern Australia, cold weather and green watery pastures increase the demands of the horse for hay, and hay can be fed according to demand. Some stallions may consume four to five biscuits of hay per day.

If hay alone is not enough to maintain the stallion's body condition, a small amount of grain can be added to

the diet. Two kilograms (4 litres) of oats will supply over a third of the energy requirements of the stallion. Once again, if you choose to feed grain then add a vitamin and mineral supplement. If you choose a premixed feed, be sure to feed it according to the rates recommended by the manufacturer. Some mineral and vitamin supplements come in a pelleted form with a concentrated feeding rate of 1 kg per day, and they can be fed with or without grain, as the stallion's metabolism dictates.

If you need the stallion's coat to look smart for inspections by mare owners or photography sessions there are a number of steps you can take to improve coat condition. Feeding fat in the form of stabilised rice bran such as Equi-Jewel, oil or sunflower seeds will help put a shine on the coat.

Biotin is a vitamin that can help increase hoof strength and improve hair condition if fed in high doses. Supplements such as Bio-Bloom contain biotin, zinc and other ingredients that improve coat condition.

In making the change from the non-breeding season to the breeding season, remember that the stallion will eat about 10% more feed but has a 20% increase in energy, protein, lysine, calcium, phosphorus and magnesium requirements. Therefore, the feed you provide may have to be more concentrated. Vitamin A and E requirements increase by over 50%, but the requirement for trace minerals is relatively unchanged.

Vitamin A and vitamin E deficiencies have been linked to reproductive disorders in stallions and mares but are likely to only occur when the stallion is fed a diet containing little green feed or grass for extended periods. Selenium and manganese deficiencies have also been associated with reduced fertility. Selenium deficiencies relate to the soil selenium content and are widespread in certain parts of Australia. Manganese deficiency occurs most often when excess calcium and phosphorus decrease absorption of manganese.

Feeding the Underweight Stallion

During the breeding season an underweight stallion may become tired easily and not maintain the interest in his mares he needs, especially if he has got a big book of mares. Stallions become too thin when they expend more energy than they consume. To encourage weight gain, provide free-choice access to high-quality forage and supplement with the recommended amount of a fortified concentrate. If a stallion fails to gain weight on this basic diet, a fat supplement such as a stabilised rice bran or vegetable oil can be included in the ration to provide a concentrated energy source.



Another fairly common reason for lack of condition among breeding stallions is reduced appetite. The anxiety surrounding the breeding shed may prevent some stallions from polishing off meals. If this is the case, every effort should be made to make meals especially palatable. The use of molasses and other appetising feedstuffs will typically encourage an otherwise distracted stallion to eat. If necessary, remove any supplements that may be playing a role in his inappetence or consider treatment for gastric ulceration.

Feeding the Overweight Stallion

More common than underfeeding, however, is overfeeding. Obesity predisposes stallions to laminitis, soundness problems (particularly of the hind legs, which is reflective of the strain placed on them during breeding), and possibly heart attacks, often caused by aortic rupture. Extremely overweight stallions may have lowered libido. If obesity is a problem, stallions should have restricted access to pastures, especially in the spring, and only enough grain to ensure the stallion's vitamin and mineral requirements are being met. An alternate way to satisfy these requirements is to feed a concentrated multipurpose vitamin and mineral supplement, such as Gold Pellet or All-Phase. Exercise is also a very important tool in the management of the overweight stallion.

In conclusion, stallions have differing requirements during the breeding and non-breeding seasons. By providing a carefully balanced diet and monitoring weight regularly, a stallion's waistline can be kept trim and tidy all year long. If the stallion's diet is based on pasture and good-quality hay and concentrate feeds and supplements are used only where necessary, your stallion will stay fit and healthy year-around, ready to meet his lovely book of ladies! ♀♀



Greasing the Joints

Unlike their wild counterparts, domesticated horses are asked to jump, to bend and flex into difficult movements, to stop and spin on a five-cent piece, to trot for hours or gallop at top speed around a track. All of this puts unnatural stresses and forces on their joints, pressure for which they were never designed to withstand.

As owners we expect nothing but the best from our horses, but even a small amount of joint pain or damage can seriously affect performance. If severe enough, it may end a horse's athletic career. Care of the joints is critical to a horse achieving his athletic capabilities, and with older arthritic horses, may allow them to continue pain-free well into old age.

To this end there are now numerous injectable and oral supplements available for treating joint problems and maintaining the structural integrity and health of the joints. The injectable products such as Pentosan are the gold standard as far as modification of joint health is concerned, but expense causes horse owners to look to daily oral supplements. This article investigates some of the important ingredients of these oral supplements and what we know about them and their interactions in horses.

Why We Use Oral Joint Supplements

Why do we feed joint supplements and what can we expect from them? Reasons for feeding fall into two categories: treatment and prevention. Some owners will feed joint supplements to a horse with existing joint injuries in an attempt to expedite healing those injuries or in the case of arthritis or severe injury, to allow the horse to partially recover to a point where he is comfortable.

Others feed preventatively, believing that if the joints are in perfect health initially there is less chance of injury or damage from high-impact activities. If feeding for treatment purposes, a difference may be seen (or be perceived) after a period of time on the supplement, but with preventative use the only positive outcome is the absence of clinical signs of joint discomfort such as reduced performance or lameness. In this way, joint supplements are insurance against possible damage and are used in many top performance horses.

The Equine Joint

Any area where two bones meet within the horse's skeleton is a joint. The ends of the bones are coated with articular cartilage so they slide smoothly over one another during movement. Joints are encapsulated in a fluid-filled sac called the joint capsule that protects the joint.

The nutrient-rich synovial fluid that fills the sac is an extremely slippery substance that allows smooth passage of one bone over another and absorbs some of the shock from high-impact work, where bones are forced together under great pressure. The fluid nourishes the articular cartilage

with proteins, enzymes, and sodium hyaluronate, a glycosaminoglycan (GAG) that is an important structural component of the joint cartilage and responsible for the viscosity (thickness) of the synovial fluid.

Cartilage has no blood supply, so it cannot repair itself when damaged. Joint damage can involve any part of the joint or limb structure including tendons, ligaments, bones, articular cartilage, and the fibrous joint capsule. Damage to any of these components instigates inflammation, which allows large numbers of 'cleanup' enzymes and prostaglandins into the joint. The GAGs are destroyed and the synovial fluid loses its viscosity. Without the rich nutrients of the synovial fluid, the articular cartilage starves and becomes damaged, opening the way for bone damage as the bone ends begin to grind against one another. The bone responds by laying down more bone tissue, called spurs, which can further damage the joint and lead to severe joint inhibition and pain.

It doesn't necessarily take a single traumatic strain or accident to cause this kind of damage. Progressive degeneration of the joints is also commonplace, especially in hardworking horses, and degenerative joint disease (DJD) limits the careers of many performance horses.

Treatment Strategies

Once joint damage is apparent, there are a number of measures that can be taken to treat the horse. These include rest, supportive bandaging, application of hot and cold therapies, and pharmaceutical intervention, including the use of nonsteroidal anti-inflammatory drugs (such as phenylbutazone) and corticosteroids injected directly into the joint. More recently treatment has included proactive therapy to reintroduce some of the essential nutrients into the joint capsule to encourage repair. Whilst some of these treatments are injectable (Hyaluronate, polysulfated glycosaminoglycan [PSGAG]) others are given orally as dietary supplements, in the expectation that these 'building blocks' will find their way to the joints and begin the recovery process.

Oral Joint Supplement Labelling

When shopping for a 'joint supplement,' you could be forgiven for getting totally confused about what it's actually supposed to do. Labelling is usually vague at best with no substantial claims about what the product can do for your horse.

Nutraceuticals such as joint supplements fall somewhere between being a pharmaceutical and a food additive, so at present they are difficult to register in Australia. Because of this, manufacturers are not allowed to make claims about joint supplements and must rely on the consumers' knowledge of the active ingredients and what they can do. All joint supplements should be clearly labelled, showing the full list of ingredients and the amounts contained. Beware of

the supplement with absent or confusing ingredient lists that don't actually say much about what you're spending your money on.

Oral Joint Supplement Ingredients

Oral joint supplements generally contain a few key ingredients (glucosamine, chondroitin) that may be found alone or in various combinations. Supplements vary in price from reasonably economical to very expensive. Liquids are dearer than powders, too. For a joint supplement to be effective, it must first be absorbed through the gut, then it must travel through the circulatory system to the joints, and finally the body must be able to use it in repair of joint tissue. Each of these steps requires careful research in horses before any constituent can be given the ultimate seal of approval. Though there is some evidence in humans and dogs to suggest efficacy of some of these products, it is not necessarily the case that the data can be directly extrapolated to horses. Once each constituent has been investigated alone, the various combinations must also be researched as there may be some synergistic relationships, which suggest specific ratios of the various building blocks and their mode of delivery.

Research is extremely expensive, and the studies required to fully cover all the variables associated with equine joint supplements would take years to complete and cost millions of dollars. Investigating preventative aspects would be very difficult. Whilst we await these studies, we only have experience and anecdotal evidence to go on. What we can say is that most oral joint supplements will do no harm, and if a benefit is perceived, then it's as well to try the supplement rather than not, provided the owner feels the horse is worthy of the expense. Now we need to get technical to discuss how various substances might enhance health, and so the big words need to come out.



Glucosamine

Probably the most common and useful ingredient in joint supplements is glucosamine. It is present in supplements either as glucosamine hydrochlorides or glucosamine sulphates. The former is a more concentrated form of glucosamine, containing more per gram than the sulphates.

Glucosamine is a vital precursor to the synthesis of collagen and GAG in joint cartilage and the production of hyaluronic acid (HA). It is also the dominant ingredient of synovial fluid and an important component of joint cartilage. GAG is an essential constituent of proteoglycan (PG), which makes up articular cartilage. HA is key to the lubricating properties of joint fluid and the elasticity and shock-absorbing properties of joint cartilage. Glucosamine reduces inflammation by inhibiting destructive enzymes and scavenging free radicals that destroy the cartilage matrix integrity and cause inflammation and pain.

This anti-inflammatory effect is a genuine modification of the disease process, not simply a pain-killing effect. In man glucosamine is the oral supplement of choice for the management of osteoarthritis. The beneficial effects of glucosamine may take up to three weeks to occur, and glucosamine is very safe, making it suitable for long-term use.

Chondroitin Sulphate

With respect to chondroitin sulfate (CS), absorption is debatable due to its very large molecular weight (size). CS is typically obtained from bovine, whale, or shark cartilage. Several studies have characterised the intact absorption as low.

CS is the primary GAG that makes up the PG found in joint cartilage. It is known that joint injury and the ensuing inflammation cause a reduction in the amount of PG. Thus, CS theoretically could help replace PG. CS has also been proposed to inhibit the action of some enzymes associated with cartilage breakdown and to have general anti-inflammatory properties. Data to support the proposed actions of CS in in vitro studies have shown positive results. Definitive data to document the effect of CS in living horses are not available now. Data in other models (humans, rats and dogs) do not automatically hold true for horses. So, the jury is still out with respect to CS and its influence on joint health in horses.

Methylsulfonylmethane (MSM) and Methionine

Methionine, a sulfur-bearing amino acid, is converted to an important component of connective tissue called S-adenosylmethionine (SAM). SAM has been used successfully in the treatment of osteoarthritis in humans. Unfortunately, SAM is expensive, but its precursors are not.

Methionine is a catalyst that aids in the metabolism of glucosamine to GAG. The sulphur supplied by methionine is also used in the synthesis of collagen, which gives strength

to connective tissue and cartilage. MSM is a source of organic sulphur and has been suggested to have an anti-inflammatory effect, but there is no data to substantiate how much MSM is required for this effect.

Trace Minerals (Copper, Zinc, Manganese)

Zinc is required for over 70 different enzymatic functions including hydrolysis and cross-linking needed for collagen formation. Zinc-deficient animals have impaired cartilage and collagen development. Copper is a coenzyme needed for the formation of disulfide bonds in collagen. Disulfide bonds add strength and elasticity to structures. Manganese is important in this formula as a co-factor in GAG and HA synthesis as it relates to cartilage formation, repair and maintenance. Most unsupplemented 'home mix' diets do not contain enough zinc, copper or manganese to supply the needs of athletic horses, but the value of extra trace minerals in joint supplements to unproven.

Antioxidants

Vitamin C is a powerful free radical scavenger. Free radical levels are higher in inflamed joints and can damage collagen and PG. Vitamin C has a number of roles in formation and maturation of collagen. Vitamin E and selenium are potent antioxidants that bind free radicals that damage joints and muscles. Many diets fed to performance horses do not supply enough vitamin E and selenium, but again there is no data in horses on value in a joint supplement.

Shark Cartilage, Perna Mussel and Sea Cucumbers?

Are substances extracted from the sea useful for joint health of horses? Or are we talking about sea horses! Shark or bovine cartilage and perna mussels are 'natural' sources of CS, but questions exist about the ability of the horse to absorb CS intact, as stated previously, especially from an unprocessed source.

The bottom line regarding the efficacy of oral joint supplements is unclear. Many knowledgeable horsemen have used joint supplements on horses in their care with glowing success. Others have tried supplements and reported no detectable difference in their horses. Scientifically, many potentially promising benefits of oral supplements exist, but to date the efficacy of oral joint supplements in horses is unproven. Further, information on how much ingredient or which combination of ingredients is necessary to facilitate a joint response is totally absent. The good news is that some controlled research is being conducted to answer important questions surrounding oral joint supplements. If you are 'treating' existing arthritis, you may see a response, but the benefits in preventative use are much harder to justify. ☹☹

The Results Speak for Themselves



"I have been using Equi-Jewel for several years and I have never been more impressed - the benefits are great and easily seen, the horses' coats glow and their topline improves. But the hidden benefits are improved digestion and happy horses who are looking for their feeds. My horses have never looked better and their appetites have improved dramatically. I am consistently complimented on how well my horses are looking and they are constantly in the winner's circle!"

- Caroline Wagner

"The best thing about Equi-jewel is that it keeps weight on a really fit event horse right up to a competition. Equi-jewel is the absolute best thing I have ever used to keep weight on the horses."

- Olivia Bunn

Member of Eventing Team for Athens
Olympic Games



www.ker.com
equivit@ker.com
1800 772 198

Photo Credit: Roz Neave

LIQUID GOLD

NEW



elevateW.S.[™]
Water-Soluble Natural Vitamin E

Intended as an oral vitamin E supplement for horses of all classes

Guaranteed analysis
Contains a minimum of 500 IU per ml of vitamin E

Ingredients
Vitamin E as d-alpha-tocopherol, polyethoxylated castor oil, water and n-propyl-alcohol

Oral solution for animal use only.
Not for human use.
Keep out of reach of children.

236 ml (8 oz)

elevateW.S.[™]
Water-Soluble Natural Vitamin E

New Generation Natural Vitamin E

- Highly potent source of liquid natural vitamin E
- Greater biological activity than synthetic vitamin E
- Boosts blood level of vitamin E rapidly and effectively
- Recommended for all types of horses
- Research proven
- Easy to use

**Kentucky
Equine
Research**
INCORPORATED
AUSTRALASIA

equivit@ker.com
www.ker.com
1 8 0 0 7 7 2 1 9 8