

Supplements Explained

Translating ingredients to better understand supplements

We have prepared this brochure to assist horse owners in understanding the ingredients and composition of supplements so that they can make informed feeding decisions and avoid common mistakes such as over supplementation.

What is a supplement?

A supplement is a product that contains one or more vitamins, minerals, herbs or amino acids and is added to the diet of a horse.

What is over supplementation?

Over supplementation is increasingly becoming an issue. This occurs when owners are feeding more than one supplement with ingredients that overlap resulting in imbalances and excesses of vitamins and minerals in the diet.

When should you feed supplements?

The majority of dietary requirements should be met from roughage sources. Supplements, concentrates, pellets and coarse mixes should only be used to top up vitamin, mineral, energy and protein levels.

Supplements should be included in the diet of most horses, the exception is when horses are fed the recommended dosage of a pellet or branded complete horse feed. In practice most owners do not feed the recommended dosage of pellet or branded feed which results in reduced vitamin and mineral intake.

A Case Study - Over Supplementation

The owner reported that her horse had a brittle mane and tail and a poor coat. The horse had access to pasture and two hard feeds per day. The owner also said the horse didn't finish the hay portion of the feed.

Total concentrate intake included 2kg Coarse Mix A, 0.5kg Coarse Mix B, 1.5kg meadow hay chaff, a hoof supplement and Equilibrium B1 Cool Mix. Table 1 illustrates the duplication of the essential nutrients across the coarse mixes and supplements, because each product has added vitamins and minerals this changes the mineral balance and has resulted in over supplementation of minerals and vitamins.

The feeding program was adjusted to chaff, sugar beet pulp and Equilibrium. Within a month of adjusting the diet the owner reported the horse was eating hay with enthusiasm despite rainfall bringing through lush pasture. There was a dramatic improvement in coat condition and overall health. Table 2 shows that the new simplified diet meant the horses nutritional requirements were still met and resulted in saving the owner time and money preparing feeds. More importantly, the owner noticed an improvement in her horses coat and overall wellbeing.

Energy, protein, mineral and vitamin content in roughage is highly variable depending on soil quality, grass type and stage of growth, temperature, season, recent rainfall and current weather conditions. Equilibrium is incorporated into the diet to balance and top up vitamin and mineral levels.

Table 1

	Coarse Mix A	Coarse Mix B	Hoof Supplement	Equilibrium
Carbohydrate	✓	✓		
Fats & Oils	✓	✓		
Protein	✓	✓		
Calcium	✓		✓	✓
Phosphorus	✓		✓	✓
Magnesium	✓		✓	✓
Sodium	✓			✓
Chloride				✓
Potassium	✓		✓	✓
Copper	✓		✓	✓
Zinc	✓		✓	✓
Manganese	✓			✓
Iron	✓			✓
Selenium		✓		✓
Cobalt			✓	✓
Iodine			✓	✓
Vitamin A	✓			✓
Vitamin E	✓	✓		✓
B Vitamins	✓			✓

Table 2

	Chaff	Sugar Beet Pulp	Equilibrium
Carbohydrate	✓	✓	
Fats & Oils	✓		
Protein	✓	✓	
Minerals	Content Variable	Some	✓
Vitamins	Content Variable		✓

A SUMMARY OF COMMON INGREDIENTS IN SUPPLEMENTS

Ingredient Listing	Description	Sources	Requirement	Evidence
Adenine	Common name - Vitamin B4, a B Group Vitamin	Synthesised in the large intestine	No dietary requirement	
Apple Cider Vinegar	Common name - ACV		No dietary requirement	
Ascorbic Acid	Common name - Vitamin C	Synthesised by liver	No dietary requirement	
Aspartic Acid	Non-Essential Amino Acid	Produced in the body	No dietary requirement	
Biotin	Common name - Vitamin H & Vitamin B7 it is a B group vitamin	Synthesised in large intestine	Only when large intestine function impaired	
Brewers Yeast	Source of protein, some macro and trace minerals and vitamins. Ration is not balanced to horses requirements and is expensive protein source compared to others available.		No dietary requirement	
Calcium	Macro Mineral and is also an Electrolyte	Pasture and legumes	Yes in a balanced ratio with phosphorus.	
Chamomile	Fed as a 'calmer', prohibited for use in competition		No dietary requirement	
Chloride	Pairs with Sodium to form Sodium Chloride (table salt)		Yes	
Choline	a B group vitamin	Synthesised in large intestine	No dietary requirement	
Chondroitin	Component of cartilage, commonly found in joint supplements	Naturally occurring in the body	Worthwhile to trial on horses with joint and mobility issues and monitor results in each individual	Scientific studies have produced conflicting results, experts are divided on its effectiveness.
Chromium	Trace Mineral	Brewers Yeast	No dietary requirement	Scientific studies have produced conflicting results, some studies show benefits and others show it can be counter-productive.
Cobalt	Trace Mineral	Legume forage hay and Lucerne (Alfalfa)	Targeted supplementation required particularly for horses in work and broodmares.	
Cod Liver Oil	Source of Vitamin A & D as well as Omega 3		Target supplementation not required	
Copper	Trace Mineral	Roughage and concentrates	Yes, most feeds are slightly deficient and additional supplementation is required.	
Crude Fat	Representation of total fat content.	Roughage, grains, vegetable & fish oils	See "Feeding your horse for optimal health and performance" brochure. Fat, fibre, protein content should be low in a supplement. A high fat, fibre or protein content would reflect in either a higher daily dosage or dilution of macro mineral, trace mineral and vitamin content.	
Crude Fibre (Max)		Roughage, grains		
Crude Protein	Total nitrogen content providing an estimate of digestible protein in feed.	Legumes (lucerne/alfalfa), oil by product (soyabean meal)		
Cyanocobalamin	Common name - Vitamin B12.	Synthesised in large intestine	No dietary requirement	
Cystine	Non-Essential Amino Acid	Produced in the body	No dietary requirement	

No dietary requirement

May assist in some horses

Likely dietary requirements

Ingredient Listing	Description	Sources	Requirement	Evidence
Devils Claw	Relieve pain and inflammation, prohibited for use in competition		Veterinary advice recommended	Shows anti-inflammatory and analgesic effects
DL-alpha Tocopheryl Acetate	Common name - Vitamin E - fat soluble, antioxidant	Green pasture (decreases rapidly with storage of hay/grains)	Yes, particularly when green pasture unavailable or when supplementing with Selenium	
Dolomite	CaMg(CO ₃) ₂ - Compound containing Calcium & Magnesium		Other sources of Calcium and Magnesium have higher concentrations and better absorption.	
Echinacea	Plant marketed for immune boosting benefits		No dietary requirement	Scientific studies have produced conflicting results, experts are divided on its effectiveness.
Folic Acid	B Group Vitamin	Synthesised in large intestine	Yes, for horses in moderate to heavy work	
Full fat Soybean meal	Excellent source of essential amino acids.		Yes for lactating broodmares and growing horses. Recommended for horses lacking topline and muscling.	
Garlic			No dietary requirement	Anecdotal reports usefulness as fly repellent, scientific research has shown large quantities cause anaemia
Gelatin	Comprised of amino acids. It includes some essential as well as non-essential amino acids.		No dietary requirement	In horses research has shown that gelatin supplementation does not influence hoof quality or growth.
Glucosamine	Glucosamine is an amino sugar, it combines the sugar glucose with a non essential amino acid glutamine.	Glucosamine Hydrochloride, Glucosamine Sulphate	Worthwhile to trial on horses with joint and mobility issues and monitor results in each individual	Scientific studies have produced conflicting results, experts are divided on its effectiveness.
Glutamic Acid	Non-Essential Amino Acid		No dietary requirement	
Glycine	Non-Essential Amino Acid		No dietary requirement	
Green Lipped Mussel	Natural form of Glucosamine and Chondroitin Sulphate		Worthwhile to trial on horses with joint and mobility issues and monitor results in each individual	Scientific studies have produced conflicting results in regard to effectiveness of Chondroitin and Glucosamine, experts are divided on its effectiveness.
Iodine	Trace Mineral	Limited amounts in some concentrates and lucerne (alfalfa)	Yes	
Iron	Trace Mineral	Roughage and concentrates	Recommended for horses in heavy work, after infections and viruses which commonly results in anaemia	
Lysine	First limiting essential amino acid, this means it is present in the least amount relative to requirement.	Lucerne (alfalfa) and oil by products (full fat soybean meal)	Lactating broodmares, growing horses and horses in hard work may require targeted supplementation. Most mature horses will receive sufficient lysine by having lucerne (alfalfa) in their feed.	

No dietary requirement

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Ingredient Listing	Description	Sources	Requirement	Evidence
Magnesium	Macro Mineral and an Electrolyte	Limited amounts in roughage and concentrates	Yes	
Manadione	see Vitamin K	Produced in large intestine	No dietary requirement	
Manganese	Trace Mineral	Roughage and limited amounts in concentrates	Targeted supplementation may be required in some horses, particularly horses in work or horses receiving high concentrate diets.	
Methionine	Essential amino acid	Soybean Meal	See 'lysine' if sufficient lysine in the diet it is highly likely that dietary requirements of methionine are being met.	
MSM (methyl-sulfonyl-methane)	Source of bioavailable sulphur, a component of many compounds associated with joint structure and functions.		Trial on horses with joint and mobility issues and monitor results in each individual	Studies evaluating effectiveness of MSM in horses have not been reported.
Niacin	See Vitamin B3		No dietary requirement	
Pantothenic Acid	See Vitamin B5		No dietary requirement	
Phenylalanine	Essential amino acid	Soybean Meal	See 'lysine' if sufficient lysine in the diet it is highly likely that dietary requirements of phenylalanine are being met	
Phosphorus	Macro Mineral	Roughage and concentrates	Yes, in a balanced ratio with calcium	
Potassium	Macro Mineral and an Electrolyte	Roughage	Supplementation likely to be required for horses in work or on high concentrate diets.	
Prebiotics	A non-digestible food ingredient that promotes the growth of beneficial bacterial in the large intestine	Roughage and sugar beet pulp	Target supplementation not required as roughage should be the foundation of all horses diets.	
Probiotics	Beneficial bacteria ingested orally to add to the bacteria population in the large intestine.	Commercial probiotic products	Maybe useful for horses after a course of antibiotics or for horses that are on diets with insufficient roughage. Ensuring a correct and appropriate diet should mean probiotics aren't required on a daily basis.	
Proline	Non-Essential Amino Acid	Produced in the body	No dietary requirement	
Psyllium Husk	Used in the prevention of sand colic.		Seek veterinary advice	Scientific studies have produced conflicting results, experts are divided on its effectiveness.
Pyridoxine	see Vitamin B6		No dietary requirement	
Retinol	see Vitamin A			
Riboflavin	see Vitamin B2		No dietary requirement	
Rosehip	Tends to be used as a Vitamin C supplement in horses.		Vitamin C synthesised by liver, supplementation rarely required	
Salt	Common name for Sodium Chloride, an electrolyte and macro minerals		Yes, unless you are feeding a supplement that contains salt, Sodium Chloride or lists Sodium and Chloride in its composition.	

No dietary requirement

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Likely dietary requirements

Ingredient Listing	Description	Sources	Requirement	Evidence
Seaweed	Contains many minerals, the only mineral that makes an impact on recommended dietary intake levels is Iodine. Iodine content highly variable.		No, choosing a supplement that contains Iodine means seaweed should not be added to the diet.	
Selenium	Trace Mineral	Roughage and concentrates	Targeted supplementation is often required due to widespread soil deficiencies. Over supplementation can be a problem, feed only one supplement or if feeding more than one ensure there is no double ups in selenium or other trace elements.	
Sodium	Macro Mineral and an Electrolyte	Limited quantity in roughage & concentrate	Yes	
Soy flour	Source of essential amino acids		Alternative to Soybean Meal for lactating broodmares and growing horses. Recommended for horses lacking topline and adequate muscling. Available from most feed and produce stores. More expensive compared to soybean meal.	
Sulphur	Macro Mineral	Roughage, Concentrates & Full Fat Soybean meal	Target supplementation not required	
Thiamine	see Vitamin B1			
Threonine	Essential amino acid	Soybean Meal, Lucerne (Alfalfa)	See 'lysine'. If lysine requirements in the diet are being met it is highly likely that dietary requirements of threonine are also being met.	
Tryptophan	Common name - L-Tryptophan, essential amino acid	Lucerne (alfalfa) and oil by products (full fat soybean meal)	See 'lysine'. If lysine requirements in the diet are being met it is highly likely that dietary requirements of tryptophan are also being met.	Insufficient research has been conducted to establish targeted supplementation of tryptophan for calming. Some studies have shown low doses can cause mild excitement whilst higher doses reduce endurance and can cause anaemia.
Valine	Essential amino acid	Soybean Meal, Lucerne (Alfalfa)	See 'lysine' if there is sufficient lysine in the diet it is highly likely that dietary requirements of valine are being met.	
Vervain	Fed as a calmer, prohibited for use in competition		No	
Vitamin A	Fat soluble vitamin	Green pasture (decreases rapidly with storage of hay/grains)	Target supplementation recommended when green pasture unavailable	
Vitamin B1	Water soluble vitamin, often included in calming supplements	Produced in the large intestine	Target supplementation recommended for horses in work or under stress	

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Ingredient Listing	Description	Sources	Requirement	Evidence
Vitamin B2	Water soluble vitamins	Produced in the large intestine	Target supplementation not required when horse is fed a high roughage low concentrate diet promoting good gut health.	
Vitamin B3				
Vitamin B4				
Vitamin B5				
Vitamin B6				
Vitamin B12				
Vitamin C	Water soluble vitamin	Produced in liver	No dietary requirement	
Vitamin D	Fat soluble vitamin	Exposure of horse to direct sunlight, fed suncured roughage	Target supplementation should not be required if managed appropriately	
Vitamin E	Fat soluble vitamin, antioxidant	Green pasture (decreases rapidly with storage of hay/grains)	Yes, when green pasture unavailable or when supplementing with Selenium	
Vitamin K	Fat soluble vitamin	Roughage and produced by intestinal bacteria	Targeted supplementation not required.	
Whey Powder	Milk extract. Concentration of protein, fat and lactose vary depending on type of Whey Powder.		Supplementation of other protein products (lucerne/alfalfa/soybean) are able to provide excellent amino acid content more economically.	
Yeast Culture	Common name - Dried Yeast, Yeast Extract. Increases the level of 'good' bacteria in the hind gut.		Maybe useful for horses after a course of antibiotics or for horses that are on diets with insufficient roughage. Ensuring a correct and appropriate diet should mean yeast culture products aren't required on a daily basis.	
Zinc	Trace Mineral	Roughage and concentrates	Target supplementation is recommended. Whilst absolute deficiency is rare, it is quite common for horses to have a borderline deficiency.	

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Likely dietary requirements

Definitions

Amino acid – Building blocks of protein

Essential Amino Acid – Needs to be supplied in the diet

Macro Mineral – Mineral required in grams per day.

Non-Essential Amino Acid – Synthesised by the animal, not required in the diet.

Trace Mineral – Mineral required in milligrams per day.

EQUILIBRIUM

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