Guest Editorial

A thousand racehorse trainers cannot be wrong – Can they?

Take a creature that has spent thousands of years evolving to munch on pasture for up to 16 h per day, stick it in a 3 m x 3 m box, and supply its entire nutrient requirements in two high-energy meals that can be scoffed in under 30 min; add a light sprinkling of vitamins and minerals – then stand well back.

Many horse owners and trainers know from bitter experience that high-starch concentrate diets can trigger a raft of problems such as insulin resistance, laminitis, development orthopaedic disease and exertional rhabdomyolysis (for review, see Harris and Kronfeld, 2003). Add colic, acidosis and gastric ulcers, and it seems that overindulgence in these sweet feeds that horses love so much can cause more damage to the intestinal tract than a late-night lamb sandwich with extra-hot chilli sauce. But there is more! Try keeping the animal safely locked up for 23 h a day, and you could well be treated to a display of unremitting weaving, crib-biting, or wind-sucking, as the concentrate diet provides an extra hit of endorphins to reinforce the self-narcotising effect of these boredom-induced stereotypes (Gillham et al., 1994). When eventually you do find the time to let Nedsy out for a little light exercise, do not be surprised if this carbo-charged beast behaves less like a well-trained show pony, and more like Russell Crowe with a bad hangover. Disease, intestinal damage and misbehaviour are all hallmarks of poor dietary management, and as concentrate diets have become a mainstay of equine nutrition, it is vital to understand their cause and to develop ways of feeding that minimise these risks.

A number of studies have quantified the effects of high-energy feeds in adult horses (e.g. Holland et al., 1996), but how much harm can such diets cause to the young and impressionable animal? In a recent issue of The Veterinary Journal, Professor Christine Nicol’s group from Bristol University compared the effects of feeding starch and sugar, versus fat and fibre, to foals from 4 to 42 weeks of age (Wilson et al., 2007). The group argued that more work needs to be conducted in developing animals, citing studies in mice (Wainwright et al., 1994) and pigs (Leskanich and Noble, 1999), which suggests that macronutrient balance can influence eventual brain structure. There is certainly evidence that early nutrition in foals has a long-term influence on the secretion of hormones such as insulin-like growth factor-I (IGF)-1 (Cyambeulk and Laarveld, 1996), which, in turn, has important effects on muscle growth, fat deposition and bone development.

Observing that the foals given starch and sugar were less calm in temperament tests, Wilson et al. (2007) also explored a possible mechanism, by examining whether blood tryptophan levels are lowered sufficiently to influence serotonin production. Tryptophan itself is sold worldwide as a calmative for excitible horses (Grimmett and Silence, 2005) and, as with all natural substances, it is a challenge for forensic laboratories to police its use. However, in some countries, the manufacturers of these ‘nutrition supplements’ have been put on notice by regulatory authorities either to drop their claims of pharmacological activity or register their products as therapeutic goods, which will require hard evidence of their safety and efficacy. This will become a challenging and costly exercise, and may result in some calming products becoming more difficult to obtain in the future. If this encourages horse owners to improve their handling skills, pay more attention to the animal’s ethological needs, or gain a better understanding of the relationship between diet and behaviour, it can only be a good thing.

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References
