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EPO-Equine Advisory

The Racing Medication and Testing Consortium (RMTC) received a copy of an advertisement sent by a supplement company selling a product named EPO-Equine. The company claims the product increases red blood cell counts in the horse leading to improved performance.

EPO Equine is a feed supplement or nutraceutical. It is purported for use as a daily feed additive. According to the company website, it contains a number of vitamins, nutrients, and minerals. These are similar to ingredients found in health food supplements. The listed ingredients are:

- Ascorbic Acid (vitamin C)
- Niacinamide (vitamin B3 derivative)
- Pyridoxine HCl (vitamin B6)
- Folic Acid (vitamin B9)
- Cobalamin (likely vitamin B12)
- Iron (essential nutrient)
- Alpha-lipoic acid (anti-oxidant)
- Inositol (sugar)
- PABA (advertised to combat fatigue, irritability, depression and eczema in humans)
- Lutein (carotenoid – nutrient found in plants)
- Lycopene (an essential nutrient found in tomatoes – FDA allows claim for prevention of prostate cancer)
- Boron (essential nutrient)
- Nickel (trace mineral not considered an essential nutrient)
- Vanadium (trace mineral not considered an essential nutrient)
- Yellow Dock Extract (homeopathic antioxidant)
- Echinacea Augustifolia (homeopathic purported for immune system support, reduced pain and inflammation)
- Dandelion Extract (homeopathic that is purported to cause diuresis and improved digestion)
- Proprietary Endurance™ Complex including Choline Bitartrate (Choline bitartrate is similar to B vitamins)

Because nutraceuticals do not require ingredient lists, it is not known if anything else may be contained in this complex.

The advertisement also references a study out of the Equine Research Centre in Guelph, Canada.[1] That four horse study, which has never been repeated, reported that Echinacea caused an increase in

[1] O'Neill, W., *Immunological and haematinic cosequences of feeding a standardized Echinacea (Echinacea angustifolia) extract to healthy horses*, Equine vet. J., 34(3) 222-27 (2002).

red blood cell size and concentration. While the study data may be accurate, it is difficult to tell if there was a true statistical difference based upon the analysis completed.

The statistical methods use in the study are of concern and likely skewed results and their interpretation. The investigators used a paired t-test for all comparisons when the two-sample t-test would have been more appropriate. The use of the paired t-test results in an increased likelihood of detecting a significant finding. Furthermore, the researchers failed to adjust for the use of the t-test multiple times which also increases the likelihood of finding a significant difference when one does not exist. Therefore, one cannot determine whether there is a real difference or only an apparent but insignificant difference as a result of feeding Echinacea to these horses.

Furthermore, it is important to remember that what a manufacturer can say about nutritional products is not regulated by the FDA. Included in the advertisement are purported results from a non-existent laboratory and a testimonial from trainer Scott Lake. When Organization of Racing Investigators (ORI) officers questioned Mr. Lake about his involvement he responded was that he essentially allowed a friend to use his name on the advertisement and he did not believe that using EPO-Equine altered the performance of his race horses.

EPO-Equine would only be expected to stimulate red blood cell production if a horse experienced a deficiency in vitamins and/or minerals required for hemoglobin synthesis. Given the racehorse's exceptionally high plane of nutrition, this is most unlikely.

The use of nutraceuticals, however, is cause for justifiable concern. Control over the production of nutritional products does not match that of pharmaceutical production. Ingredients can be inconsistent with respect many factors including potency, concentration, stability during storage and their sources are not well-regulated. There can be high variability in content between, or sometimes within, batches of product. Because of this inconsistency, a trainer may incur a positive test after using one of these products, despite a long-standing history of uneventful use.