

VETERINARY IMMUNOGENICS LTD

Registered in England No. 2776008

HYPERMUNE & HYPERMUNE-RE

Produced in the United Kingdom in total compliance with European Regulations for the Manufacture of Veterinary Pharmaceuticals

"Our purpose is to promote all the benefits of immunoprophylaxis and immunotherapy and to be established as the premier producer of the finest animal plasma in the world."- Veterinary Immunogenics Ltd (December 1997)

Plasma in Equine Practice

The initial primary use of equine plasma has been to transfer immunity from adult horses to foals with Failure of Passive Transfer (FPT) following Jeffcott's work originally published in 1974(1,2). While this is probably still the main use of plasma in foals there are a number of additional indications for plasma to be considered as part of a preventive or treatment strategy particularly in foals.

1. Treatment of FPT
2. Transfer of specific antibody.
- 3 Use in septic foals
4. Clinical nutrition in sick neonatal foals

1. Treatment of Failure of Passive Transfer

FPT foals are susceptible to painful, debilitating and potentially fatal infectious disease such as septicaemia, joint-ill, navel-ill, diarrhoea and pneumonia. The intravenous administration of Hypermune or Hypermune-RE provides many immune proteins as well as IgG for the foal which has failure of passive transfer of colostral immunity.

IgG is the immunoglobulin isotype found in the highest concentration in blood and plays a major role in antibody mediated defence mechanisms. Because of its size it can escape from blood vessels more easily than other immunoglobulin molecules thus readily participating in the defence of tissue spaces and body surfaces. IgG can opsonise, agglutinate and precipitate antigen but it can activate the complement cascade only if sufficient molecules have accumulated in a correct configuration on the antigen surface.

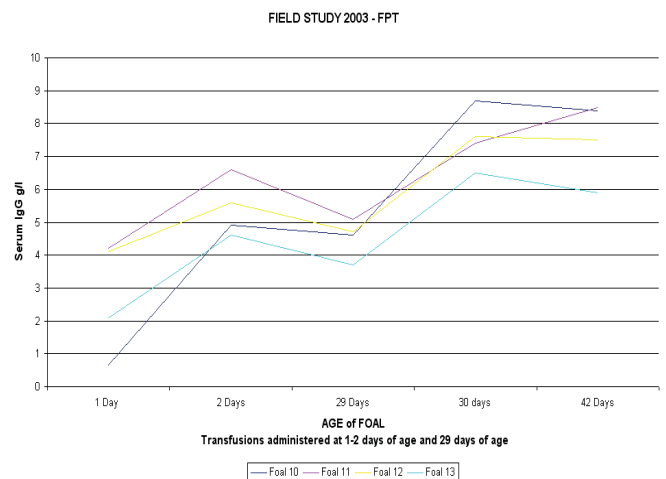
Hypermune Study.

Failure of Passive Transfer may require more than one administration of Hypermune to sustain satisfactory levels of foal serum IgG. Study results suggest that FPT foals may benefit from a second litre at 3-4 weeks old to close the window of susceptibility to septic challenge as foal serum IgG increases naturally only after 8-10 weeks of age. (3)

1. Jeffcott L, B. (1974) Some practical aspects of the transfer of passive immunity to new-born foals. *Equine Veterinary Journal*. **6** 109-115.

2. Jeffcott L, B. (1975) The transfer of passive immunity to the foal and its relation to immune status after birth. *Journal of Reproduction and Fertility*. **23** 727-733.

3. Tizzard I. (2004) Immunity in the Fetus and Newborn. **Veterinary Immunology: An Introduction**. 7th Edition. W B Saunders & Co, London: p228.



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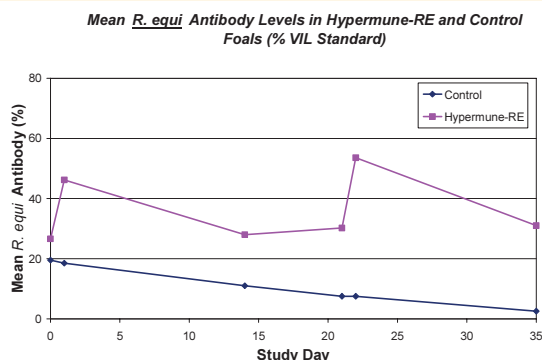
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2. Transfer of Specific Antibody

Rhodococcus equi antibodies

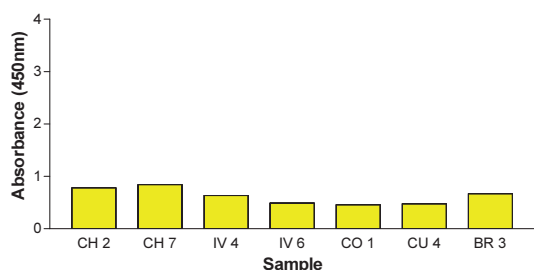
Hypermune products contain declared minimum levels of IgG and Total protein and specific *Rhodococcus equi* antibodies in Hypermune-RE.

In addition there are beneficial immune proteins such as Gram negative Endotoxin antibodies arising from the specific hyper-immunisation programme for the donor horses.

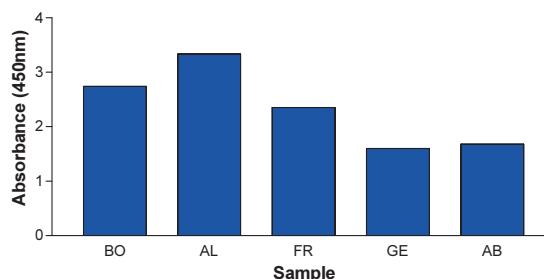


Gram -ve Endotoxin antibodies

General Horse: Comparison @ 1/300



Hypermune-RE: Comparison @ 1/300



3. SEPTICAEMIA in the foal and Plasma

In the presence of sepsis in foals the immunoglobulins are rapidly consumed whether derived from colostral transfer or plasma, resulting in a shortened half-life. Immunoglobulins normally have a half-life of about 21 days. In the presence of infection the half life might be as low as a few hours and additional plasma transfusions may be indicated and in the case of severely compromised foals a number of litres may be required over a few days.

Furthermore, scientific evidence in recent years is supporting the use of equine plasma in the treatment of septic foals (1, 2 and 3). Improved neutrophil function was observed after plasma transfusion in the septic foals which suggests that factors in the plasma in some way promote white cell activity. On this evidence it is recommended that plasma is administered as soon as septicaemia is suspected or confirmed in the neonatal foal.

This has been further endorsed by Professor John Madigan at Rossdale's Foal Care Course in Newmarket in January 2008 when he emphasised that in his clinic at the University of California all septic foals are given a litre of plasma at the outset **irrespective of IgG status**.

Hypermune, therefore, should be a prime consideration as part of the treatment protocols when faced with septicaemia in the foal (3).

1. McTaggart, C *et al* (2005) Effect of Plasma Transfusion on Neutrophil Function in Healthy and Septic Foals. Australian Veterinary Journal. **83** (8) 499-505.
2. Gardner *et al* (2007) Serum opsonization capacity, phagocytosis, and oxidative burst activity in neonatal foals in the intensive care unit. Journal of Veterinary Internal Medicine. **21** (4) 797-805.
3. Peek *et al* (2004) A prospective study of neonatal septicemia and factors influencing survival. 50th Annual convention of the American Association of Equine Practitioners. www.ivas.org Document number P1412.1204.

4. Clinical nutrition in sick neonatal foals

It has been reported recently that young sick foals benefit nutritionally from receiving equine plasma for its albumin and fibronectin content as well as the immunoglobulins (1).

1. Halliwell, GD (2010) Clinical Nutrition: Approaches to mare and foal treatments. Veterinary Times. **40** (37) 14-15.

For more information on Hypermune products visit
www.veterinaryimmunogenics.com

or contact tombarr@veterinaryimmunogenics.com