



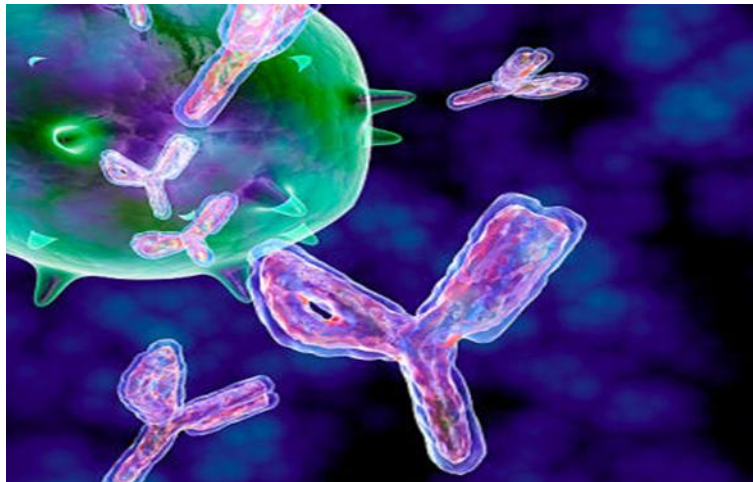
Foal IgG

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a. Immunoglobulin G

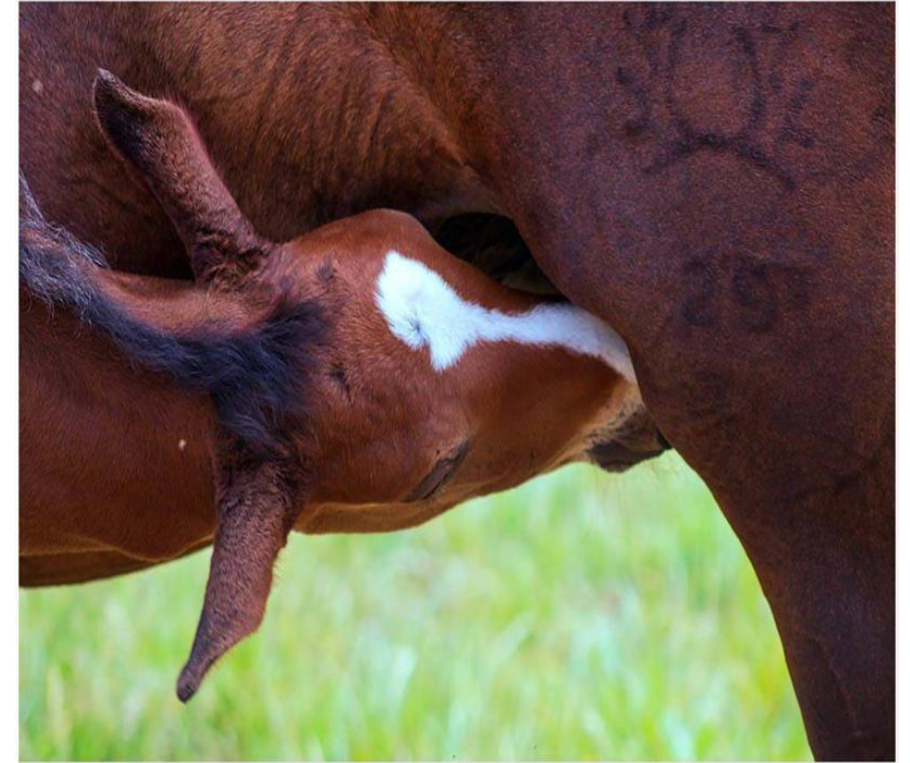
Immunoglobulin G (IgG) is the main component of immunoglobulin in serum, accounting for approximately 75% of the total immunoglobulin content in serum. The normal value is 9.5~12.5 mg/mL. Immunoglobulin G is the main antibody of the body's anti-infection immunity. Most of the antibacterial, antiviral and antitoxin antibodies produced by the body under antigen stimulation belong to immunoglobulin.



a. Neonatal Horse Antibody IgG

Foals are born without immunoglobulins (Ig) and must obtain sufficient antibodies from the mare's colostrum. Foals that do not receive sufficient amounts of colostrum or antibodies within 24 hours of birth are more likely to suffer from diarrhoea, pneumonia and infectious disease.

Therefore, the intake of colostrum during the foal's first few weeks is crucial to increase the foal's immunity against common diseases. Low levels of IgG can lead to bacterial infections, arthritis, pneumonia and enteritis. Up to 25% of foals may have low levels of IgG and delayed test results require expensive intravenous immunoglobulin. Without prompt diagnosis and treatment, a defenceless foal may die.



a. Failure Passive Transfer (FPT)

Foals are born with little or no immunity to infection. There is a minimal amount of immunoglobulin-M (IgM) produced in-utero, but insufficient to ensure adequate external protection. Foals acquire that immunity initially through the mare's colostrum, which should be high in immunoglobulins. There is a system in the foal's gut that allows absorption of immunoglobulins during the first 12 to 24 hours of life. The level of absorption decreases during that period, which is why it is essential to have the foal nurse as soon as possible after birth.

However, ensuring that a foal receives adequate colostrum is not a guarantee of protection against Failure of Passive Transfer (FPT). There is the possibility that the colostrum may not contain an adequate immunoglobulin level, or that the foal for some reason is unable to absorb them. For this reason, it is always advisable to test the foal's blood for immunoglobulin levels ideally between 9 and 12 hours after birth. Desirable levels are greater than 800 mg/dL. Levels between 400 and 800 mg/dL should be considered partial FPT which may require supplementation depending upon circumstances. Levels below 400 mg/dL are complete failure of passive transfer and should be supplemented.



b. Neonatal Horse IgG Test

IgG test is a very important test that determines how well your foal is fighting disease. It determines whether the foal is getting enough antibodies from its colostrum through passive transfer.

IgG Level	Illustrates
<400 mg/dL	Passive transfer failure/low immune level
400-800 mg/dL	Partial failure of passive transfer/low immune level
>800 mg/dL	Passive transfer successful/normal immune level

b. Neonatal Horse IgG Test

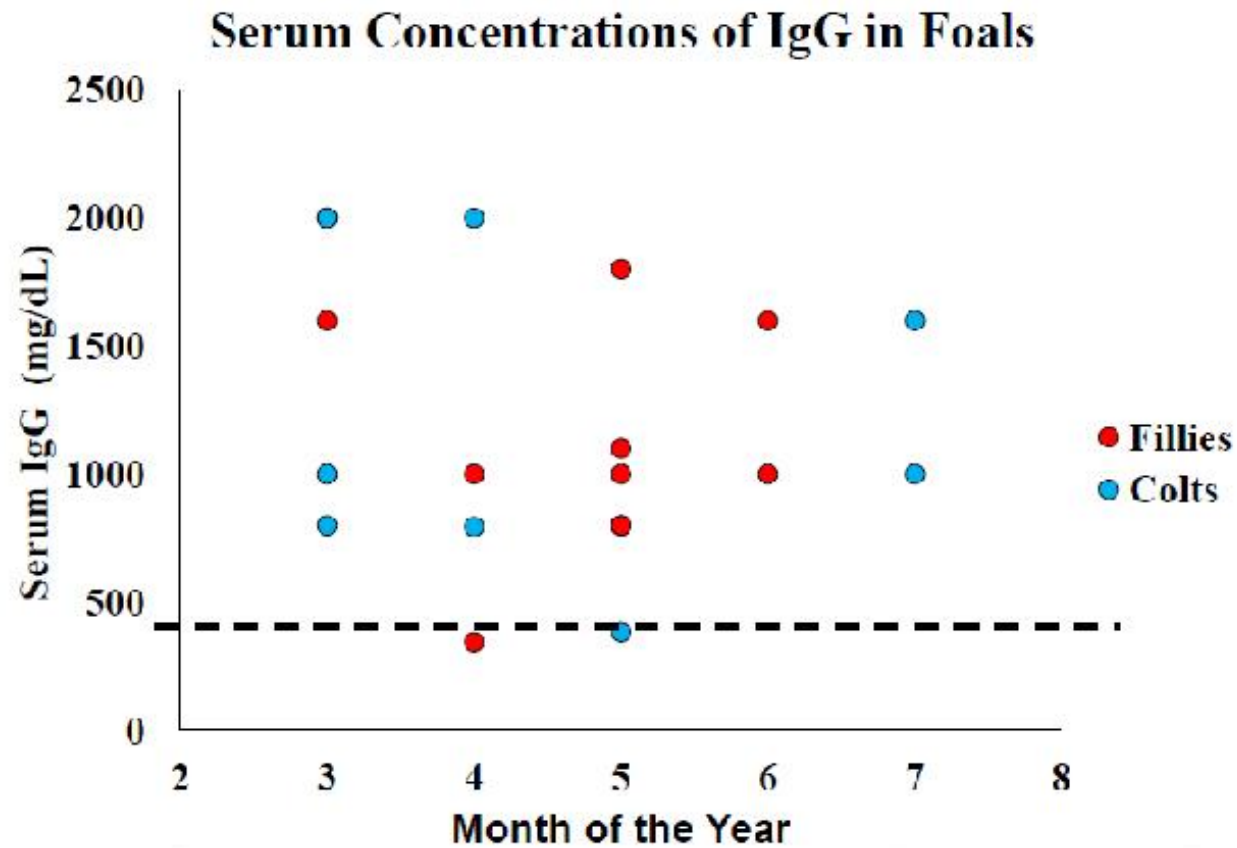


Figure 5: Serum concentration of IgG in fillies (red dots) and colts (blue dots) born during different months of the year. Data are semi-quantitative measurements of IgG in individual animals. Values below the dotted line indicate failure of passive transfer.

c. Causes of Passive Transfer Failure

There are many reasons why passive transfer may fail. These include:

- ❑ Mares that drip or shed milk a few hours before delivery. These mares are actually losing their antibody-rich colostrum, which is necessary for the foal's survival.
- ❑ Orphaned or abandoned foals and foals that are unable to grow and lactate (e.g., due to stunting, premature birth, postpartum, weakness or limb deformity) have lost the ability to receive much-needed colostrum from their mares.
- ❑ The mare's colostrum is of poor quality and does not contain the type or quantity of antibodies required to protect the foal, which may lead to passive transfer failure. This can occur if the mare is not properly vaccinated or is moved to a new environment too close to foaling time.
- ❑ Foals that can breastfeed but will not absorb antibodies from colostrum may also have passive transfer failure.

c. Treatment of Passive Transfer Failure

Treatment of foals diagnosed with complete or partial passive transfer failure requires an alternative source of immunoglobulin. There are three main ways this can be done:

- ☐ The foal can be fed fresh or frozen colostrum.
- ☐ Dry IgG products can be mixed with water and bottled to feed foals with insufficient colostrum. These products are stable at room temperature and have a longer shelf life than fresh or frozen colostrum, but they are expensive and have different absorption effects.
- ☐ High IgG horse plasma can be injected intravenously. This option is used in foals that have very low IgG levels (less than 200 mg/dL), are too old to absorb oral immunoglobulins or have abnormal gastrointestinal function, and are unable to absorb immunoglobulins. It is recommended to check blood IgG levels after supplementation .

d. Comparison of Foal IgG Tests

InSight Equine-IA Foal IgG Detection Reagent	IDEXX Foal IgG
Fluorescence immunochromatography	ELISA test card in lateral flow format
Two-step method (sampling - adding)	Multiple steps (easy to operate errors)
100-3000 mg/dL (wide linear range)	100-800 mg/dL (narrow linear range)
1:500 (small dilution ratio means smaller error)	About 1:5000 (dilution ratio is small and error is large)
2 years shelf life	1 year shelf life
Store at room temperature (easy to transport)	Store at 2°C – 8°C (cold chain transportation)
Quantitative testing (instrument testing)	Semi-quantitative



InSight[®] Equine-IA

Foal Immunoglobulin G (e IgG) Rapid Quantitative Test

Woodley have developed a rapid, accurate, reliable and highly sensitive detection method for Immunoglobulin G in foals.

The InSight Equine-IA Foal Immunoglobulin G (e IgG) Rapid Quantitative Test is a fluorescence immunoassay used with the InSight Equine-IA Veterinary Immunoassay Analyser quantitative determination of Immunoglobulin G (IgG) concentration in equine serum, plasma and whole blood.

It can be stored at room temperature.





Thank You