Rationale for Adequan® i.m. Dosing Regimen

Marian G. Little, DVM Technical Services Veterinarian, Luitpold Pharmaceuticals

One of the most common causes of loss of use in the performance horse is lameness due to non-infectious degenerative and/or traumatic joint dysfunction. Adequan® i.m. (polysulfated glycosaminoglycan), has been available to veterinarians for management of equine degenerative joint disease (DJD) of the carpal and hock joints for almost three decades. Commonly asked questions relative to Adequan® i.m. dosing include:

1. “What is the FDA approved dosing regimen for Adequan® i.m.?”

Confirmed by findings from a Dose Titration Study, the recommended dosage1 of Adequan® i.m. is:

- 500 mg every 4 days for 28 days intramuscularly (for a total of 7 injections)

For Example:

Administer 1 dose

Every 4 days

For 7 treatments

Restricted to use by or on the order of a licensed veterinarian.

Start with the regimen early in the disease cycle.

Stay with it as the horse may enjoy greater mobility over a lifetime.2,3

Determine if Adequan is the right choice for your patients with DJD.
2. "Why is Adequan® i.m. administered every 4 days?"

- Pharmacokinetics of Adequan® i.m. 96 hours post-injection in the horse were investigated by Burba et al.4 Burba et al. demonstrated that Adequan® i.m. diffused into the circulation, was transported into synovial fluid, and was absorbed by articular cartilage at therapeutic levels reported to inhibit certain cartilage degrading enzymes.4 These findings supported the FDA approved dosing regimen for Adequan® i.m.

Concentrations of Adequan® i.m. peaked in serum and synovial fluid within 2 hours post-injection, then rapidly declined and remained at or above therapeutic levels for the remainder of the 96-hour test period4.

Concentrations of hyaluronic acid nearly doubled 48 hours post-injection, with significant increases noted from 24 to 96 hours4.

Concentrations of Adequan® i.m. at or near therapeutic levels were detected in the cartilage of all eight horses 96 hours post-injection4.

Technical Bulletin

After intramuscular administration, Adequan® i.m. is well-absorbed and reaches joints quickly:

- Peak levels achieved in the joints within 2 hours.
- HA nearly doubles at 48 hours.
- Detected in cartilage and subchondral bone up to 96 hours.

When used at the labeled dosing regimen, Adequan® is proven to improve carpal flexion, resulting in reduced lameness.1

INDICATIONS

Adequan® i.m. (polysulfated glycosaminoglycan) is recommended for the intramuscular treatment of non-infectious degenerative and/or traumatic joint dysfunction and associated lameness of the carpal and hock joints in horses.

3. "Are there "prophylactic" or "maintenance" dosing regimens for Adequan® i.m.?"

- No. Based on the pharmacokinetics established by Burba et al., persistence of Adequan® i.m. in equine serum, joint fluid, or articular cartilage beyond 96 hours has not been shown.4 No published data exists to support prophylactic or maintenance dosing regimens for Adequan® i.m. Furthermore, no prophylactic or maintenance dosing regimens are stated in the Dosage and Administration section of the package insert5.

Upon an initial diagnosis of DJD, treatment recommendations are to initiate the label 7-dose series (500 mg every 4 days for 28 days intramuscularly). The series may be repeated as needed upon recurrence of the clinical signs of DJD and associated lameness of the carpal and hock joints.

When used at the labeled dosing regimen, Adequan® is proven to improve carpal flexion, resulting in reduced lameness.1

INDICATIONS

Adequan® i.m. (polysulfated glycosaminoglycan) is recommended for the intramuscular treatment of non-infectious degenerative and/or traumatic joint dysfunction and associated lameness of the carpal and hock joints in horses.

IMPORTANT SAFETY INFORMATION

Studies have not been conducted to establish safety in breeding horses. WARNING: Do not use in horses intended for human consumption. Not for use in humans. Keep this and all medications out of the reach of children. CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Please see accompanying Full Prescribing Information.
“Diagnosing horses with degenerative joint disease earlier is when we have the opportunity to make a difference. For us, a product that has i.m. administration and FDA approval behind it is an easy choice.”

Kelly B. Tisher, DVM

When you start with it and stay with it, the horse may enjoy greater mobility over a lifetime. For nearly 30 years Adequan® has been used by leading veterinarians, top trainers and riders because of its ability to help improve joint function by:

- REVERSING the disease cycle,
- REPAIRING cartilage,
- REDUCING inflammation to help keep joints moving and horses performing.
- RESTORING joint lubrication,

When you start with it and stay with it, the horse may enjoy greater mobility over a lifetime. For nearly 30 years Adequan® has been used by leading veterinarians, top trainers and riders because of its ability to help improve joint function by:

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References
5. Adequan® i.m. [package insert]. Shirley, NY: American Regent, 2019
CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

DESCRIPTION: Each 5 milliliters of Adequan® i.m. contains 500 mg of Polysulfated Glycosaminoglycan and Water for Injection q.s. Sodium Hydroxide and/or Hydrochloric Acid added when necessary to adjust pH. Sodium Chloride may be added to adjust tonicity.

PHARMACOLOGY: Polysulfated Glycosaminoglycan is chemically similar to the glycosaminoglycans in articular cartilage matrix. PSGAG is a potent proteolytic enzyme inhibitor and diminishes or reverses the pathologic processes of traumatic or degenerative joint disease which result in a net loss of cartilage matrix components. PSGAG improves joint function by reducing synovial fluid protein levels and increasing synovial fluid hyaluronic acid concentration in traumatized equine carpal and hock joints.

INDICATIONS: Adequan® i.m. is recommended for the intramuscular treatment of non-infectious degenerative and/or traumatic joint dysfunction and associated lameness of the carpal and hock joints in horses.

DOSEAGE AND ADMINISTRATION: The recommended dose of Adequan® i.m. in horses is 500 mg every 4 days for 28 days intramuscularly. The injection site must be thoroughly cleansed prior to injection. Do not mix Adequan® i.m. with other drugs or solvents.

CONTRAINDICATIONS: There are no known contraindications to the use of intramuscular Polysulfated Glycosaminoglycan.


PRECAUTIONS: The safe use of Adequan® i.m. in horses used for breeding purposes, during pregnancy, or in lactating mares has not been evaluated.

ANIMAL SAFETY: Toxicity studies were conducted in horses. Doses as high as 2,500 mg were administered intramuscularly to 6 horses twice a week for 12 weeks. This dosage is 5 times the recommended dosage and 3 times the recommended therapeutic regimen. Clinical observations revealed no soreness or swelling at the injection site or in the affected joint. No animal had any clinical or laboratory evidence of toxicity.

STORAGE CONDITIONS: Store at 20°-25°C (68°-77°F); excursions permitted to 15°-30°C (59°-86°F) (See USP Controlled Room Temperature). Discard unused portion. Dispose of spent needles in accordance with all federal, state and local environmental laws.

HOW SUPPLIED: Adequan® i.m. solution, 500 mg/5 mL (100 mg/mL) in a 5 mL single dose glass vial.

NDC 10797-995-70 5 mL Single Dose Vials Packaged 7 vials per box

AMERICAN REGENT, INC. Made in U.S.A.
ANIMAL HEALTH IN99501
Shirley, NY 11967 Rev. 1/19
(631) 924-4000 MG #44455
(800) 458-0163
NADA #140-901, Approved by FDA

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

DESCRIPTION: Each mL contains Polysulfated Glycosaminoglycan 100 mg, Benzyl Alcohol 0.9% v/v as a preservative, and Water for Injection q.s. Sodium Hydroxide and/or Hydrochloric Acid added when necessary to adjust pH. The solution is clear, colorless to slightly yellow.

PHARMACOLOGY: Polysulfated Glycosaminoglycan is chemically similar to the glycosaminoglycans in articular cartilage matrix. PSGAG is a potent proteolytic enzyme inhibitor and diminishes or reverses the pathologic processes of traumatic or degenerative joint disease which result in a net loss of cartilage matrix components. PSGAG improves joint function by reducing synovial fluid protein levels and increasing synovial fluid hyaluronic acid concentration in traumatized equine carpal and hock joints.

INDICATIONS: Adequan® i.m. Multi-Dose is recommended for the intramuscular treatment of non-infectious degenerative and/or traumatic joint dysfunction and associated lameness of the carpal and hock joints in horses.

DOSEAGE AND ADMINISTRATION: Practice aseptic techniques in withdrawing each dose to decrease the possibility of post-injection bacterial infections. Adequately clean and disinfect the stopper prior to entry with a sterile needle and syringe. Use only sterile needles, and use each needle only once.

The vial stopper may be punctured a maximum of 10 times.

The recommended dose of Adequan® i.m. Multi-Dose in horses is 500 mg every 4 days for 28 days intramuscularly. The injection site must be thoroughly cleansed prior to injection. Do not mix Adequan® i.m. Multi-Dose with other drugs or solvents.

CONTRAINDICATIONS: There are no known contraindications to the use of intramuscular Polysulfated Glycosaminoglycan.


PRECAUTIONS: The safe use of Adequan® i.m. Multi-Dose in horses used for breeding purposes, during pregnancy, or in lactating mares has not been evaluated.

SAFETY AND EFFICACY: Safety and efficacy studies utilizing Adequan® i.m. Multi-Dose were not performed. Adequan® i.m. Multi-Dose was approved based on the conclusion that the safety and effectiveness of Adequan® i.m. Multi-Dose will not differ from that demonstrated for the original formulation of Adequan® i.m.

ANIMAL SAFETY: Animal Safety studies utilizing Adequan® i.m. Multi-Dose were not performed. Safety studies were conducted in horses using the single dose formulation. Doses as high as 2,500 mg were administered intramuscularly to 6 horses twice a week for 12 weeks. This dosage is 5 times the recommended dosage and 3 times the recommended therapeutic regimen. Clinical observations revealed no soreness or swelling at the injection site or in the affected joint. No animal had any clinical or laboratory evidence of toxicity.

STORAGE CONDITIONS: Store at 20°-25°C (68°-77°F); excursions permitted to 15°-30°C (59°-86°F) (See USP Controlled Room Temperature). Avoid prolonged exposure to temperatures ≥40°C (104°F). Use within 28 days of first puncture and puncture a maximum of 10 times. Dispose of spent needles in accordance with all federal, state and local environmental laws.

HOW SUPPLIED: Adequan® i.m. Multi-Dose solution, 5,000 mg/50 mL (100 mg/mL) in 50 mL multi-dose glass vials.

NDC 10797-959-01 50 mL Multi-Dose Vials Packaged 1 vial per box

AMERICAN REGENT, INC. Made in U.S.A.
ANIMAL HEALTH IN959
Shirley, NY 11967 Rev. 1/19
(631) 924-4000 MG #44453
(800) 458-0163
NADA #140-901, Approved by FDA