

# Immune Globulin (Human)

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## GamaSTAN™ S/D

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### Solvent/Detergent Treated

#### DESCRIPTION

Immune Globulin (Human) — GamaSTAN™ S/D treated with solvent/detergent is a sterile solution of immune globulin for intramuscular administration; it is preservative-free and latex-free. GamaSTAN S/D is prepared by cold ethanol fractionation from human plasma. The immune globulin is isolated from solubilized Cohn fraction II. The fraction II solution is adjusted to a final concentration of 0.3% tri-n-butyl phosphate (TNBP) and 0.2% sodium cholate. After the addition of solvent (TNBP) and detergent (sodium cholate), the solution is heated to 30°C and maintained at that temperature for not less than 6 hours. After the viral inactivation step, the reactants are removed by precipitation, filtration and finally ultrafiltration and diafiltration. GamaSTAN S/D is formulated as a 15–18% protein solution at a pH of 6.4–7.2 in 0.21–0.32 M glycine. GamaSTAN S/D is then incubated in the final container for 21–28 days at 20–27°C.

The removal and inactivation of spiked model enveloped and non-enveloped viruses during the manufacturing process for GamaSTAN S/D has been validated in laboratory studies. Human Immunodeficiency Virus, Type 1 (HIV-1), was chosen as the relevant virus for blood products; Bovine Viral Diarrhea Virus (BVDV) was chosen to model Hepatitis C virus; Pseudorabies virus (PRV) was chosen to model Human Herpes viruses and other large enveloped DNA viruses; and Reo virus type 3 (Reo) was chosen to model non-enveloped viruses and for its resistance to physical and chemical inactivation. Significant removal of model enveloped and non-enveloped viruses is achieved at two steps in the Cohn fractionation process leading to the collection of Cohn Fraction II: the precipitation and removal of Fraction III in the processing of Fraction II + IIIW suspension to Effluent III and the filtration step in the processing of Effluent III to Filtrate III. Significant inactivation of enveloped viruses is achieved at the time of treatment of solubilized Cohn Fraction II with TNBP/sodium cholate.

Additionally, the manufacturing process was investigated for its capacity to decrease the infectivity of an experimental agent of transmissible spongiform encephalopathy (TSE), considered as a model for the vCJD and CJD agents.<sup>11-14</sup>

Studies of the GamaSTAN S/D manufacturing process demonstrate that TSE clearance is achieved during the Pooled Plasma to Effluent III Fractionation Process (6.7 log<sub>10</sub>). These studies provide reasonable assurance that low levels of CJD/vCJD agent infectivity, if present in the starting material, would be removed.

#### CLINICAL PHARMACOLOGY

Peak levels of immunoglobulin G are obtained approximately 2 days after intramuscular injection of GamaSTAN S/D.<sup>1</sup> The half-life of IgG in the circulation of individuals with normal IgG levels is 23 days.<sup>2</sup>

Passive immunization with GamaSTAN S/D modifies hepatitis A, prevents or modifies measles, and provides replacement therapy in persons with hypogammaglobulinemia or agammaglobulinemia. GamaSTAN S/D is not standardized with respect to antibody titers against hepatitis B surface antigen (HBsAg) and should not be used for prophylaxis of viral hepatitis type B. Prophylactic treatment to prevent hepatitis B can best be accomplished with use of Hepatitis B Immune Globulin (Human), often in combination with Hepatitis B Vaccine.<sup>3</sup>

GamaSTAN S/D may be of benefit in women who have been exposed to rubella in the first trimester of pregnancy and who will not consider a therapeutic abortion.<sup>4</sup> GamaSTAN S/D may also be considered for use in immunocompromised patients for passive immunization against varicella if Varicella-Zoster Immune Globulin (Human) is not available.<sup>5</sup>

Immune Globulin (Human) is not indicated for routine prophylaxis or treatment of rubella, poliomyelitis, mumps, or varicella. It is not indicated for allergy or asthma in patients who have normal levels of immunoglobulin.<sup>6</sup>

In a clinical study in eight healthy human adults receiving another hyperimmune immune globulin product treated with solvent/detergent, Rabies Immune Globulin (Human), HyperRAB™ S/D, prepared by the same manufacturing process, detectable passive antibody titers were observed in the serum of all subjects by 24 hours post injection and persisted through the 21 day study period. These results suggest that passive immunization with immune globulin products is not affected by the solvent/detergent treatment.

## INDICATIONS AND USAGE

### Hepatitis A

The prophylactic value of GamaSTAN S/D is greatest when given before or soon after exposure to hepatitis A. GamaSTAN S/D is not indicated in persons with clinical manifestations of hepatitis A or in those exposed more than 2 weeks previously.

### Measles (Rubeola)

GamaSTAN S/D should be given to prevent or modify measles in a susceptible person exposed fewer than 6 days previously.<sup>7</sup> A susceptible person is one who has not been vaccinated and has not had measles previously. GamaSTAN S/D may be especially indicated for susceptible household contacts of measles patients, particularly contacts under 1 year of age, for whom the risk of complications is highest.<sup>7</sup> **GamaSTAN S/D and measles vaccine should not be given at the same time.**<sup>7</sup> If a child is older than 12 months and has received GamaSTAN S/D, he should be given measles vaccine about 3 months later when the measles antibody titer will have disappeared.

If a susceptible child exposed to measles is immunocompromised, GamaSTAN S/D should be given immediately.<sup>8</sup> Children who are immunocompromised should not receive measles vaccine or any other live viral vaccine.

### Varicella

Passive immunization against varicella in immunosuppressed patients is best accomplished by use of Varicella-Zoster Immune Globulin (Human) [VZIG]. If VZIG is unavailable, GamaSTAN S/D, promptly given, may also modify varicella.<sup>5</sup>

### Rubella

The routine use of GamaSTAN S/D for prophylaxis of rubella in early pregnancy is of dubious value and cannot be justified.<sup>6</sup> Some studies suggest that the use of GamaSTAN S/D in exposed, susceptible women can lessen the likelihood of infection and fetal damage; therefore, GamaSTAN S/D may benefit those women who will not consider a therapeutic abortion.<sup>4</sup>

### Immunoglobulin Deficiency

In patients with immunoglobulin deficiencies, GamaSTAN S/D may prevent serious infection. However, GamaSTAN S/D may not prevent chronic infections of the external secretory tissues such as the respiratory and gastrointestinal tract.

Prophylactic therapy, especially against infections due to encapsulated bacteria, is effective in Bruton-type, sex-linked, congenital agammaglobulinemia, agammaglobulinemia associated with thymoma, and acquired agammaglobulinemia.

## CONTRAINDICATIONS

GamaSTAN S/D should not be given to persons with isolated immunoglobulin A (IgA) deficiency. Such persons have the potential for developing antibodies to IgA and could have anaphylactic reactions to subsequent administration of blood products that contain IgA.<sup>9</sup>

GamaSTAN S/D should not be administered to patients who have severe thrombocytopenia or any coagulation disorder that would contraindicate intramuscular injections.

## WARNINGS

**GamaSTAN S/D is made from human plasma. Products made from human plasma may contain infectious agents, such as viruses, and, theoretically, the Creutzfeldt-Jakob Disease (CJD) agent that can cause disease. The risk that such products will transmit an infectious agent has been reduced by screening plasma donors for prior exposure to certain viruses, by testing for the presence of certain current virus infections, and by inactivating and/or removing certain viruses. Despite these measures, such products can still potentially transmit disease. There is also the possibility that unknown infectious agents may be present in such products. Individuals who receive infusions of blood or plasma products may develop signs and/or symptoms of some viral infections, particularly hepatitis C. ALL infections thought by a physician possibly to have been transmitted by this product should be reported by the physician or other healthcare provider to Talecris Biotherapeutics, Inc. [1-800-520-2807].**

**The physician should discuss the risks and benefits of this product with the patient, before prescribing or administering it to the patient.**

GamaSTAN S/D should be given with caution to patients with a history of prior systemic allergic reactions following the administration of human immunoglobulin preparations.<sup>9</sup>

## **PRECAUTIONS**

### **General**

**Immune Globulin (Human) should not be administered intravenously because of the potential for serious reactions.** Injections should be made intramuscularly, and care should be taken to draw back on the plunger of the syringe before injection in order to be certain that the needle is not in a blood vessel.

**Skin tests should not be done.** In most human beings the intradermal injection of concentrated gamma globulin solution with its buffers causes a localized area of inflammation which can be misinterpreted as a positive allergic reaction. In actuality, this does not represent an allergy; rather, it is localized tissue irritation of a chemical nature. Misinterpretation of the results of such tests can lead the physician to withhold badly needed human immunoglobulin from a patient who is not actually allergic to this material. True allergic responses to human gamma globulin given in the prescribed intramuscular manner are rare.

Although systemic reactions to intramuscularly administered immunoglobulin preparations are rare, epinephrine should be available for treatment of acute allergic symptoms.

### **Clinical and Laboratory Tests**

None required.

### **Clinically Significant Product Interactions**

Antibodies in the globulin preparation may interfere with the response to live viral vaccines such as measles, mumps, polio and rubella. Therefore, use of such vaccines should be deferred until approximately 3 months after Immune Globulin (Human) — GamaSTAN™ S/D administration.

No interactions with other products are known.

### **Pregnancy Category C**

Animal reproduction studies have not been conducted with GamaSTAN S/D. It is also not known whether GamaSTAN S/D can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. GamaSTAN S/D should be given to a pregnant woman only if clearly needed.

### **Pediatric Use**

Safety and effectiveness in the pediatric population have not been established.

## **ADVERSE REACTIONS**

Local pain and tenderness at the injection site, urticaria, and angioedema may occur. Anaphylactic reactions, although rare, have been reported following the injection of human immune globulin preparations.<sup>6,9</sup> Anaphylaxis is more likely to occur if GamaSTAN S/D is given intravenously; therefore, GamaSTAN S/D must be administered only intramuscularly.

## **DOSAGE AND ADMINISTRATION**

GamaSTAN S/D is administered **intramuscularly** (see PRECAUTIONS), preferably in the anterolateral aspects of the upper thigh and the deltoid muscle of the upper arm. The gluteal region should not be used as an injection site because of the risk of injury to the sciatic nerve.<sup>10</sup> Doses over 10 mL should be divided and injected into several muscle sites to reduce local pain and discomfort. An individual decision as to which muscle is injected must be made for each patient based on the volume of material to be administered.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit.

A number of factors could reduce the efficacy of this product or even result in an ill effect following its use. These include improper storage and handling of the product after it leaves our hands, diagnosis, dosage, method of administration, and biological differences in individual patients. Because of these factors, it is important that this product be stored properly and that the directions be followed carefully during use.

**Hepatitis A**

GamaSTAN S/D in a dose of 0.01 mL/lb (0.02 mL/kg) is recommended for household and institutional hepatitis A case contacts.

The following doses of GamaSTAN S/D are recommended for persons who plan to travel in areas where hepatitis A is common.<sup>3</sup>

Length of Stay	Dose Volume
Less than 3 months	0.02 mL/kg
3 months or longer	0.06 mL/kg (repeat every 4–6 months)

**Measles (Rubeola)**

GamaSTAN S/D should be given in a dose of 0.11 mL/lb (0.25 mL/kg) to prevent or modify measles in a susceptible person exposed fewer than 6 days previously.<sup>7</sup>

A susceptible child who is exposed to measles and who is immunocompromised should receive a dose of 0.5 mL/kg (maximum dose, 15 mL) of GamaSTAN S/D immediately.<sup>8</sup>

**Varicella**

If Varicella-Zoster Immune Globulin (Human) is unavailable, GamaSTAN S/D at a dose of 0.6 to 1.2 mL/kg, promptly given, may also modify varicella.<sup>5</sup>

**Rubella**

Some studies suggest that the use of GamaSTAN S/D in exposed, susceptible women can lessen the likelihood of infection and fetal damage; therefore, GamaSTAN S/D at a dose of 0.55 mL/kg may benefit those women who will not consider a therapeutic abortion.<sup>4</sup>

**Immunoglobulin Deficiency**

GamaSTAN S/D may prevent serious infection in patients with immunoglobulin deficiencies if circulating IgG levels of approximately 200 mg/100 mL plasma are maintained. The recommended dosage is 0.66 mL/kg (at least 100 mg/kg) given every 3 to 4 weeks.<sup>6</sup> A double dose is given at onset of therapy; some patients may require more frequent injections.

**HOW SUPPLIED**

GamaSTAN S/D is supplied in 2 mL and 10 mL single dose vials. GamaSTAN S/D is preservative-free and latex-free.

NDC Number	Size
13533-635-02	2 mL vial (10 pack)
13533-635-04	2 mL vial
13533-635-10	10 mL vial (10 pack)
13533-635-12	10 mL vial

**STORAGE**

Store at 2–8°C (36–46°F). Do not freeze. Do not use after expiration date.

**CAUTION**

Rx only

U.S. federal law prohibits dispensing without prescription.

**REFERENCES**

1. Smith GN, Griffiths B, Mollison D, et al: Uptake of IgG after intramuscular and subcutaneous injection. *Lancet* 1(7762): 1208-12, 1972.
2. Waldmann TA, Strober W, Blaese RM: Variations in the metabolism of immunoglobulins measured by turnover rates. In Merler E (ed.): *Immunoglobulins: biologic aspects and clinical uses*. Washington DC, Nat Acad Sci, 1970, pp 33-51.

3. Recommendation of the Immunization Practices Advisory Committee (ACIP): Postexposure prophylaxis of hepatitis B. *MMWR* 33(21): 285-90, 1984.
4. American Academy of Pediatrics, Committee on Infectious Diseases: Report. ed. 19. Evanston, 1982, p 231.
5. Gershon AA, Piomelli S, Karpatkin M, et al: Antibody to varicella-zoster virus after passive immunization against chickenpox. *J Clin Microbiol* 8(6): 733-5, 1978.
6. American Academy of Pediatrics, Committee on Infectious Diseases: Report. ed. 19. Evanston, 1982, pp 134-5.
7. Recommendation of the Public Health Service Advisory Committee on Immunization Practices: Measles prevention. *MMWR* 27(44): 427-30; 435-7, 1978.
8. American Academy of Pediatrics, Committee on Infectious Diseases: Report. ed. 19. Evanston, 1982, pp 34-6.
9. Fudenberg HH: Sensitization to immunoglobulins and hazards of gamma globulin therapy. In: Merler E (ed.): Immunoglobulins: biologic aspects and clinical uses. Washington DC, Nat Acad Sci, 1970, pp 211-20.
10. Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Family Physicians (AAFP): General recommendations on immunization. *MMWR* 2002: 51(RR02), 1-36.
11. Stenland CJ, Lee DC, Brown P, et al. Partitioning of human and sheep forms of the pathogenic prion protein during the purification of therapeutic proteins from human plasma. *Transfusion* 2002. 42(11):1497-500.
12. Lee DC, Stenland CJ, Miller JL, et al. A direct relationship between the partitioning of the pathogenic prion protein and transmissible spongiform encephalopathy infectivity during the purification of plasma proteins. *Transfusion* 2001. 41(4):449-55.
13. Lee DC, Stenland CJ, Hartwell RC, et al. Monitoring plasma processing steps with a sensitive Western blot assay for the detection of the prion protein. *J Virol Methods* 2000. 84(1):77-89.
14. Cai K, Miller JL, Stenland CJ, et al. Solvent-dependent precipitation of prion protein. *Biochim Biophys Acta* 2002. 1597(1):28-35.

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