**SANDOGLOBULIN® NF Liquid**  
Normal Immunoglobulin (Human) 12% (120 g/L) - intravenous injection

**Product Information**

**Australia**

**NAME OF THE MEDICINE**

Normal Immunoglobulin (Human) 12% (120 g/L) - intravenous injection

**DESCRIPTION**

Sandoglobulin® NF Liquid is a sterile, clear or slightly opalescent, colorless aqueous solution of purified human immunoglobulin for intravenous injection. Sandoglobulin® NF Liquid has a normal osmolality of 360 mOsm/kg and is approximately isonotic. The pH value of the ready-for-use solution is 5.3 and the solution contains no buffer substances. Sandoglobulin® NF Liquid is supplied as a 50 mL or 100 mL solution containing 5 or 10 g of human immunoglobulin respectively.

The concentration of the active component (reconstituted immunoglobulin G (IgG) of human origin) is 12% (120 g/L). At least 96% (typically 99%) of the total protein is IgG at least 90% of it is monomers and dimers. The product contains further small amounts of IgA, IgM and Immunoglobulin E (IgE). The level of IgM in the product is normally below 15 mg/L. The distribution of the IgG subclasses present in Sandoglobulin® NF Liquid closely resembles that in normal human plasma. The distribution of IgG subclasses present in Sandoglobulin® NF Liquid is 46.5% IgG1, 32.5% IgG2, 2.1% IgG3 and 0.8% IgG4. Preclinical evaluation (PKA) levels are less than 10 IU/L.

Sandoglobulin® NF Liquid contains the following stabilizers: trehalose, sucrose and glycine.

The stabilizers, in particular nicotinamide, minimize the formation of IgG dimers, which is important for the stability of the product. The preparation contains traces of sodium chloride (≤ 10 mM), and Sandoglobulin® NF Liquid contains no carbohydrates like sucrose or maltose.

**PHARMACOLOGY**

**Pharmacodynamic properties**

Sandoglobulin® NF Liquid contains mainly IgG with a broad spectrum of antibodies against infectious agents. Sandoglobulin® NF Liquid reflects the IgG antibodies present in the normal population. It is usually prepared from pooled plasma from not fewer than 1000 donors. It has a distribution of IgG subclasses closely proportional to that in ex vivo human plasma. Adequate doses of the medicinal product may restore abnormal low IgG levels to normal levels. The range of action in indications other than replacement therapy is not fully established, but includes immunomodulatory effects.

Nicotinamide has been included in Sandoglobulin® NF Liquid as a stabilizer to help prevent IgG aggregation. It has in vitro pharmacological activity as a water-soluble vitamin and a constant of the normal human body, essential in maintaining normal cellular function. There is no known contamination.

Higher serum levels of nicotinamide, such as those achieved with maximum prophylaxis, are associated with a slight-to-moderate decrease in Haemoglobin (Hb) levels has been observed in clinical studies in patients receiving immunoglobulin. It may have pharmacological activity. It is a protective agent that can help prevent IgG dimerisation. It may have pharmacological activity. It is a protective agent that can help prevent IgG dimerisation. It may have pharmacological activity. It is a protective agent that can help prevent IgG dimerisation. It may have pharmacological activity. It is a protective agent that can help prevent IgG dimerisation. It may have pharmacological activity. It is a protective agent that can help prevent IgG dimerisation. It may have pharmacological activity.
Use in the elderly
Clinical studies of Sandoglobulin® NF Liquid did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. 

Sandoglobulin® NF Liquid should be used with caution in patients over 65 years of age and judged to be at increased risk of developing renal insufficiency.

Carcinogenicity
No carcinogenicity studies have been conducted with Sandoglobulin® NF Liquid.

Genotoxicity
No genotoxicity studies have been conducted with Sandoglobulin® NF Liquid.

Interactions with other medicines
Live attenuated virus vaccines
Immunoglobulin administration may impair the efficacy of live attenuated virus vaccines such as measles, mumps, rubella and varicella for a period of at least 6 weeks and up to 3 months. After administration of this product, an interval of 3 months should elapse before vaccination with live attenuated virus vaccines. In the case of measles, this impairment may persist for up to 1 year. Therefore patients receiving vaccines should have their antibody status checked.

Drug interactions
Patients treated with phenytoin concomitantly should be carefully monitored, as there has been a published report of hepatic toxicity with concurrent administration of nicardipine and phenytoin. 

Nicardipine may also interact with the metabolism of primidone and carbamazepine.

It is possible that the hepatotoxic potential of alcohol is exacerbated by carbamazepine.

Nicotinamide may also interact with the metabolism of primidone and phenytoin.

Patients treated with phenytoin concomitantly should be carefully monitored, as rare cases of reversible aseptic meningitis have been observed with human normal immunoglobulin.

An increase in severe creatinine level and/or acute renal failure has been observed with IVIg treatment.

Very rarely, thrombocytopenic reactions such as myocardial infarction, stroke, pulmonary embolism, deep vein thrombosis.

DOSAGE AND ADMINISTRATION
Dosage
Sandoglobulin® NF Liquid replaces missing IgG antibodies in primary and secondary immunodeficiency syndromes and corrects functional disturbance of the immune system e.g. in autoimmune disease. The dose and dosage regime is dependent on the indication.

The daily dose should not exceed 1 g/kg body weight.

The dosage recommendations are summarised in the following table:

<table>
<thead>
<tr>
<th>Indication</th>
<th>Dose</th>
<th>Frequency of injections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Immunodeficiency*</td>
<td>Starting dose: 0.4 to 0.8 g/kg body weight, thereafter: 0.2 to 0.8 g/kg body weight</td>
<td>every 2 to 4 weeks to obtain IgG trough level of at least 4 to 6 g/L</td>
</tr>
<tr>
<td>Secondary Immunodeficiency</td>
<td>0.2 to 0.4 g/kg body weight</td>
<td>every 3 to 4 weeks to obtain IgG trough level of at least 4 to 6 g/L</td>
</tr>
<tr>
<td>Children with AIDS</td>
<td>0.2 to 0.4 g/kg body weight</td>
<td>every 3 to 4 weeks</td>
</tr>
</tbody>
</table>

Immunomodulatory therapy:

- Scleroderma (systemic sclerosis)
  - 0.8 to 1 g/kg body weight /d
  - 0.4 to 0.8 g/kg body weight /d
  - either 0.8 to 1 g/kg body weight /d or 0.4 to 0.8 g/kg body weight /d
  - for 3 to 7 days
- Ehrlichia typhus
  - 0.4 to 0.8 g/kg body weight /d
  - in divided doses over 2 to 5 days in association with doxycycline

*In replacement therapy the dosage may need to be individualised for each patient dependent on the pharmacokinetic and clinical response.

In patients not previously exposed to frgil, Sandoglobulin® NF Liquid should not be infused at an initial rate of 0.3 ml/kg/h for 1 h. if well tolerated, the rate may be gradually increased to a maximum of 1.8 ml/kg/h.

In patients who have been previously exposed to frgil, Sandoglobulin® NF Liquid should be infused at an initial rate of 0.5 ml/kg/h for 30 min. If well tolerated, the rate may be gradually increased to a maximum of 1.8 ml/kg/h.

Dose adjustment in renal insufficiency
In case of renal insufficiency, frgil dosing should be discontinued. While reports of renal dysfunction and acute renal failure (see PRECAUTIONS) have been associated with the use of many of the licensed fri products, those containing succinase as a stabiliser accounted for a disproportionate share of the total number. In patients at risk, the use of fri products that do not contain succinase may be considered.

In patients at risk, fri administration should:
- be administered at the minimum concentration and infusion rate practicable. Sandoglobulin® NF Liquid contains no carbohydrates like sucrose or maltose.

Administration
Patients naïve to human normal immunoglobulins, patients switched from an alternative fri product or patients who have not received fri for a long time should have vital signs and general status monitored regularly during and for the first hour after the first infusion.

In all patients, fri administration requires:
- adequate hydration prior to the initiation of the infusion of fri.
- monitoring of urine output.
- monitoring of serum creatinine levels.
- avoidance of concomitant use of loop diuretics.
- monitoring during infusion and for at least 20 minutes after infusion.

The recommended infusion rate per kg body weight under DISEASE AND ADMINISTRATION must be closely followed.

Rapid infusion of Sandoglobulin® NF Liquid may cause adverse reactions. Reactions are most likely to occur during the first hour of the infusion.

In case of adverse reaction, either the rate of administration must be reduced or the infusion stopped. The treatment required depends on the nature and severity of the side-effect.

In case of shock, the current medical standards for shock treatment should be observed.

Allow the product to reach room temperature before use. Do not shake.

Inspect the solution for particulate matter, turbidity and discolouration.

The solution should be clear or slightly opaque. Slight yellow discoloration is not a concern and can be disregarded.

Do not use if turbid. Do not mix other medicinal products in the same infusion line.

Each bottle of Sandoglobulin® NF Liquid is for use on one patient on one occasion only. It should be used immediately on opening and any unused product discarded in accordance with local requirements.

It is strongly recommended that every time Sandoglobulin® NF Liquid is administered to a patient, the name and batch number of the product be recorded in order to maintain a link between the patient and the batch of the product.