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# TECHNICAL DATA SHEET SATYA 1%
# DPFTPT-131

## 1. PRODUCT OVERVIEW

### 1.1. Brand name

Satya 1%

### 1.2. Generic name

Procaine Hydrochloride 1% injectable solution

### 1.3. Dosage form

Injectable solution

### 1.4. Description

Satya 1% is an injectable solution for dental use that contains Procaine Hydrochloride as an active ingredient in a 1% concentration as an anesthetic effect generator.

Procaine Hydrochloride is an ester-type anesthetic agent that provides anesthesia with a prolonged onset of action, low anesthetic potency, short duration and rapid action. The therapeutic importance lies in the lower toxicity.

## 2. COMPOSITION INFORMATION

### 2.1. Active pharmaceutical ingredients

The active ingredients of the product Procaine Hydrochloride 1% are described below:

| COMPONENT | CONCENTRATION | QUANTITY PER CARPUL 1.8 mL |
|---|---|---|
| Procaine Hydrochloride | 10 mg/mL | 18 mg |

### 2.2. Non-active pharmaceutical ingredients

The excipients of the product Procaine Hydrochloride 1% are described below:

| COMPONENTS |
|---|
| Sodium Chloride |
| Sodium Benzoate |
| Sodium Metabisulfite |
| Hydrochloric Acid |
| Water for Injection |

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## 3. PRODUCT PROPERTIES

### 3.1. Physico-chemical properties

| PROPERTIES | VALUE |
|---|---|
| Appearance | Clear, colorless solution |
| Odor | odorless |
| Stage | Liquid |
| Volume | 1.8mL |
| Density | ~ 1.0g / $cm^3$ |
| Viscosity | ~ 1.0 cp |
| Solubility | Very Soluble |
| Boiling Point | ~ 100°C |
| Melting point | ~ 0°C |

### 3.2. Pharmacological properties

*Pharmacodynamic properties*

*Pharmacotherapeutic group*: Nervous system / Anesthetics / Local anesthetics / Aminobenzoic acid esters / Procaine, ATC code: N01BA02.

*Mechanism of action and pharmacodynamic effects*: Procaine Hydrochloride blocks both the initiation and the conduction of nerve impulses by reducing the permeability of the neuronal membrane to sodium ions and thus stabilizes it reversibly. This action inhibits the depolarization phase of the neuronal membrane, causing the action potential to propagate insufficiently and the consequent blockade of conduction. The time of appearance of the effects and their duration depend on the administered dose, the route of administration, as well as the intrinsic properties of the drug (potency, pKa and lipid solubility).

*Clinical efficacy and safety*: Procaine Hydrochloride is a local anesthetic of low potency, its action is fast, the time of onset of action is 10 minutes and of short duration, the duration of the effects is 0.7 to 1 hour. The therapeutic importance lies in the lower toxicity, compared to other local anesthetics.

*Pharmacokinetic properties*

*Absorption*: The systemic absorption of Procaine Hydrochloride depends on the dose, concentration, route of administration, local vascularity of the infiltrated tissue and the degree of vasodilation. No information is available on plasma concentrations achieved after administration of this drug.

*Distribution*: Local anesthetics are bound to plasma proteins at 6%. In general, the lower the plasma concentration of the drug, the greater the percentage of drug bound to plasma. Local anesthetics appear to cross the placenta by passive diffusion. The rate and degree of diffusion are governed by the degree of binding to plasma proteins, the degree of ionization, and the degree of lipid solubility.

*Biotransformation*: Procaine Hydrochloride in plasma is rapidly hydrolyzed by plasma cholinesterase to p-aminobenzoic acid (PABA) and dimethylaminoethanol.

*Elimination*: Elimination half-life is 0.1 hours. About 80% of p-aminobenzoic acid is excreted free or conjugated in the urine. While approximately 30% of the diethylaminoethanol formed is also excreted in the urine, the rest is metabolized by the liver.

## 4. USE AND APPLICATIONS

### 4.1. Indications

Local anesthesia by infiltration in adults (pain associated with wounds, minor surgery, burns, abrasions, neural therapy).

### 4.2. Posology

As with any local anesthetic, doses vary depending on the area of anesthesia, the vascularization of the tissues, the number of nerve segments to be blocked, the tolerance of the individual, and the technique and profund of anesthesia. The lowest dose that produces efficient anesthesia should be used. The necessary dose must be determined individually.

The absence of pain is related to the individual sensitivity of the patient, it must use the lowest dose necessary to obtain effective anesthesia. For longer procedures, one or more cartridges may be required, provided the maximum recommended dose is not exceeded.

In general, the dosage will depend on the anesthetic action required, the extension of the area to be anesthetized, etc. The maximum dose, in 24 hours, in infiltration anesthesia, is 1 gram in adults. Doses are usually, in infiltration anesthesia and in dental practice, 1.8 ml of Procaine Hydrochloride 1% injectable solution.

In elderly and acutely ill or debilitated patients and in those with heart or liver disease, lower doses should be used. Lower doses are also required when injections are repeated and for nerve blocks in highly vascularized areas, to avoid excessively high plasma concentrations.

*Pediatric patients*

Contraindicated

*Special populations*

Due to the lack of clinical data, special care should be taken to administer the lowest dose that produces effective anesthesia in patients older than 70 years and in patients with impaired renal or hepatic function.

*Elderly patients*:

In the case of elderly patients, the doses are calculated individually according to the age and body weight of the patients.

*Patients with renal insufficiency*:

Patients should be monitored, since renal insufficiency may cause toxic effects due to the accumulation of active metabolites. The dose may need to be adjusted.

*Patients with hepatic insufficiency*:

The dose may need to be halved in patients with hepatic insufficiency.

*Patients with heart failure*:

The dose may need to be halved in patients with heart failure.

*Other special populations*:

Doses may need to be reduced in patients in poor general condition or in those with reduced plasma protein binding capacity (arising eg from renal insufficiency, hepatic insufficiency, cancer or pregnancy).

### 4.3. Interactions

*Interactions with Procaine Hydrochloride*

- Additive interactions with other local anesthetics

The toxicity of local anesthetics is additive. The total dose of Procaine Hydrochloride administered should not exceed the maximum recommended dose.

- Sulfonamides

Ester-type local anesthetics such as procaine are metabolized to para-aminobenzoic acid, PABA. PABA, for its part, antagonizes the effects of sulfonamides. Therefore, procaine should not be used in patients receiving sulfonamides.

- Sedatives (central nervous system depressants)

If sedatives are used in conjunction with anesthetics to reduce patient restlessness, the dose of the anesthetic should be reduced since, being both central nervous system depressants, they may have an additive effect.

- Cholinesterase inhibitors

Local anesthetics may antagonize the effects of cholinesterase inhibitors by inhibiting neuronal transmission in skeletal muscle, especially if large doses of local anesthetics are used. Dose adjustment of

the cholinesterase inhibitor may be necessary to control symptoms of myasthenia gravis.

- Muscle relaxants

By displacing muscle relaxants from their binding sites with plasma proteins and, in some cases, by metabolic competition, local anesthetics generally potentiate the action of muscle relaxants.

- Monoamine oxidase inhibitors

Patients receiving monoamine oxidase inhibitors (including linezolid) and local anesthetics may be at increased risk of hypotension. It is advisable to stop the monoamine oxidase inhibitor days before surgery that requires a subarachnoid block.

- Calcium

The increase in calcium concentration decreases the action of local anesthetics.

- Diuretics (Acetazolamide)

The administration of Procaine concomitantly with acetazolamide (diuretic), increases the plasma half-life of Procaine.

- Opiates

Concomitant use of low-dose local anesthetics (0.125–0.25%) and epidural opioid agonists (eg, alphentanil, fentanyl, morphine, and sufentanil) may increase analgesia and reduce dose of opioid needs. Local anesthetics can increase the vagal effects and respiratory depression induced by opioid agonists.

### 4.4. Overdose

The term local anesthetic overdose is often used in a broad sense to describe:

- Absolute overdose
- Relative overdose
    - Accidental injection into a blood vessel
    - Abnormal rapid absorption into the systemic circulation
    - Delayed drug metabolism and elimination

In case of relative overdose, patients usually develop symptoms within a few minutes. In contrast, in the case of absolute overdose, signs of toxicity appear some time after injection, depending on the injection site.

Following an overdose (absolute or relative), since arousal may be transient or absent, the first manifestation may be drowsiness, progressing to unconsciousness and respiratory arrest.

*Symptoms due to Procaine Hydrochloride:*

At usual doses, intoxication due to the Procaine Hydrochloride is very rare. Numbness of the tongue and perioral region may be an early symptom of systemic toxicity. Other signs and symptoms that may appear are excitement, agitation, dizziness, tinnitus, blurred vision, tremors and seizures. With higher doses, the period of excitement may cease to lead to depression with drowsiness, respiratory depression and coma, myocardial depression, hypotension, bradycardia, arrhythmia, and cardiac arrest.

### 4.5. Safety data

| HEALTH | ENVIRONMENT | PHYSICAL |
|---|---|---|
| Not classified as dangerous. Substance or mixture exempt from classification under GHS | | |

GHS: Global Harmonization System.

See safety data sheet

### 4.6. Contraindications

- Hypersensitivity to the active substance or to any of the excipients
- pediatric patients
- It should not be administered to patients with sensitivity to PABA (p-aminobenzoic acid), parabens (sulfonamides, hydroxybenzoate-type preservatives) or ester-type local anesthetics (tetracaine, etc.) due to the risk of cross-allergy.

### 4.7. Warnings

*Patients with epileptic disease:*

Due to seizures, all local anesthetics must be used with caution.

*Patients with liver disease:*

Due to hepatic metabolism, the lowest dose that produces an effective anesthesia should be used.

*Patients with kidney disease:*

In patients with renal insufficiency, there is a decrease in the elimination of Procaine Hydrochloride metabolites through the urine.

*Patients with heart failure:*

It can produce intense myocardial depression, as well as prolonged arrhythmias.

*Patients with acidosis:*

Acidosis and reduced plasma protein concentration may increase the risk of systemic toxicity.

*Malignant hyperthermia*

May contribute to the development of malignant hyperthermia in the event that supplemental general anesthesia is required.

*Elderly patients:*

The lowest dose that produces effective anesthesia should be used in patients over 70 years of age.

**4.8. Cautions**

*Risk associated with accidental intravascular injection:*

Accidental intravascular injection (e.g. inadvertent intravenous injection) can cause serious adverse reactions, including convulsions, followed by central nervous system depression or cardiorespiratory depression and coma, progressing to respiratory arrest at term due to rapid elevation of Procaine Hydrochloride levels in the systemic circulation.

Therefore, to ensure that the needle does not enter a blood vessel during injection, aspiration should be performed prior to injecting the local anesthetic product. However, the absence of blood in the syringe does not guarantee that intravascular injection has been avoided.

*Risk associated with an intraneural injection:*

An accidental intraneural injection can cause the drug to travel retrograde along the nerve.

In order to avoid intraneural injection and to avoid nerve block-related nerve injury, the needle should be gently withdrawn if the patient feels a sensation of electric shock during the injection or if the injection is particularly painful. If nerve injury occurs, the neurotoxic effect may be aggravated by the neurotoxic potential of Procaine Hydrochloride.

**4.9. Fertility, pregnancy and lactation**

*Pregnancy*

Local anesthetics rapidly cross the placenta. The safety use in pregnant women, except during childbirth, has not been established; retrospective studies with local anesthetics at the beginning of pregnancy in cases of emergency surgery, did not register teratogenic effects; However, the possibility of other fetal adverse effects could not be excluded. As a cautionary measure, it is preferable to avoid the use of Procaine Hydrochloride during pregnancy.

*Lactation*

It is unknown if Procaine Hydrochloride or its metabolites are excreted in breast milk, and if this could affect

the child; However, no problems have been described in humans. A risk to newborns/infants cannot be excluded.

*Fertility*

No relevant data regarding toxic effects on fertility in animals were found. No data in humans are available to date.

### 4.10. Side effects

Adverse reactions after administration are similar to those seen with other ester-type local anesthetics. These adverse reactions are generally dose-related and may result from elevated plasma levels caused by overdose, rapid absorption, or inadvertent intravascular injection. They may also derive from hypersensitivity, idiosyncrasy, or reduced tolerance on the part of the specific patient.

| MedDRA SYSTEM ORGAN CLASSIFICATION | FREQUENCY | SIDE EFFECTS |
|---|---|---|
| **Disorders of the blood and lymphatic system** | Not known | Methemoglobinemia. |
| **Nervous system disorders** | Frequent | Excitement<br>Agitation<br>Dizziness<br>Tinnitus<br>Blurry vision<br>Tremors<br>Seizures<br>Numbness of the tongue and perioral region. |
| | Not known | Depression with drowsiness and coma. |
| **Cardiovascular disorders** | Not known | Myocardial depression<br>Hypotension<br>Bradycardia<br>Arrhythmia<br>Cardiac arrest. |
| **Alterations of the respiratory system** | Not known | Respiratory depression. |
| **Gastrointestinal disorders** | Frequent | Nausea<br>Vomiting. |

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| | | |
|---|---|---|
| **Alterations of the skin and subcutaneous tissue** | Rare | Urticaria due to allergic reaction. |
| **Immune system disorders** | Rare | Anaphylactoid reaction. |

## 5. QUALITY ASSURANCE

The product Procaine Hydrochloride 1% is manufactured under the strictest technical and quality controls. Its production process is carried out in special manufacturing areas that have environmental, microbiological and physical limitations and the operations are carried out by previously trained and qualified personnel. The supplies used in this are previously verified and approved in accordance with the requirements of current pharmacopoeias, this process includes control of packaging materials, raw materials and supplies which are acquired by qualified suppliers.

Product quality characteristics are described below:

| PARAMETER | SPECIFICATION | REFERENCE |
|---|---|---|
| **Physico-chemical** | | |
| **Description** | Transparent liquid, colorless | USP |
| **Particulate** | | |
| Visible | Each carpul must be practically free of visible particles | USP |
| Sub-visible | The preparation complies with the test if the average number of particles present in the units tested does not exceed 3000 particles equal to or greater than 10 µm per container and does not exceed 300 particles equal to or greater than 25 µm per container. | USP |
| **Delivery volume** | The volume is not less than the nominal volume in the case of containers examined individually or, in the case of containers with a nominal volume of 2 mL or less, is not less than the sum of the nominal volumes of the containers taken collectively. | USP |
| **pH** | 3.0 – 5.5 | USP |
| **Instrumental** | | |
| **Identification** | | |

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| | | |
|---|---|---|
| Procaine Hydrochloride | The spectrum of the *Sample solution* should show all significant absorption bands present in the spectrum of the *Standard solution.* | USP |
| | A scarlet red precipitate form. | USP |
| **Assay** | | |
| Procaine Hydrochloride | 95%-105% | USP |
| **Antimicrobial Preservative** | | |
| Sodium benzoate | 80%-120% | USP |
| **Microbiological** | | |
| **Mesophiles** | No growth of microorganisms | USP |
| **Fungi and Yeasts** | No growth of microorganisms | USP |
| **Bacterial endotoxins** | ≤0.6 USP EU/mg of Procaine HCl equivalent to 6 EU/mL of injectable solution | USP |

## 6. INSTRUCTIONS

### 6.1. Preparation and administration

The cartridges must not be placed in solutions made with anti-corrosion tablets or solutions of quaternary ammonium salts such as Benzalkonium Chloride. Certain metallic ions, such as Mercury, Zinc and Copper, are contained by disinfectant solutions and these also cause inflammation after anesthesia, therefore, the cartridge should not be immersed in these solutions. For the chemical disinfection of the Cartridge surface, 91% isopropyl alcohol or 70% ethyl alcohol without denaturants is recommended; solutions containing heavy metals are not recommended.

The product should not be used if the solution is colored (pinkish or brownish) or if it contains a precipitate. The anesthetic Procaine Hydrochloride 1% must not be subjected to a sterilization process by autoclaving, due to the configuration of the packaging system and the physicochemical characteristics of the anesthetic solution. Any remaining portion of the Cartridge should be discarded.

This product should only be used by, or under the supervision of, a physician or dentist who has been sufficiently trained and familiar with the diagnosis and treatment of systemic toxicity. The patient's state of consciousness should be monitored after each local anesthetic injection.

When using Procaine Hydrochloride 1 % for a regional anesthetic infiltration or block, the injection should always be given slowly and with prior aspiration.

To avoid the risk of infection (eg, transmission of hepatitis), the syringe and needles used to prepare the solution must always be new and sterile. Disposal of unused medication and all materials that have come into contact with it will be done in accordance with local regulations.

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### 6.2. Treatment in case of overdose

Prior to the administration of regional anesthesia with local anesthetics, adequate resuscitation equipment and drugs must be ensured so that any respiratory or cardiovascular emergency can be treated immediately.

Depending on the severity of overdose symptoms, the physician or dentist should implement protocols that anticipate the need to protect the airway and provide assisted ventilation. The patient's state of consciousness should be monitored after each local anesthetic injection.

If signs of acute systemic toxicity appear, injection of the local anesthetic should be stopped immediately. If necessary, place the patient in a supine position.

CNS symptoms (seizures, CNS depression) should be treated immediately with appropriate airway/respiratory support and administration of anticonvulsant drugs. Optimal oxygenation and ventilation, along with circulatory support and treatment of acidosis, can prevent cardiac arrest.

If cardiovascular depression (hypotension, bradycardia) occurs, appropriate treatment with intravenous fluids, vasopressors, or inotropic agents should be considered. Children should be given doses according to their age and weight.

In the event of cardiac arrest, cardiopulmonary resuscitation should be performed immediately.

## 7. COMMERCIAL PRESENTATIONS

### 7.1. Nature of primary packaging

- Type I borosilicate glass cartridge with aluminum clip and Chlorobutyl liner and natural rubber plunger.

### 7.2. Nature of secondary packaging

- Blister of PET material sealed with propalcote paper in a cardboard box
- Plastic box
- Metallic container

### 7.3. Approved Presentations

- Blister box for 50 cartridges of 1.8 mL.
- Blister box for 20 cartridges of 1.8 mL.
- Blister box for 10 cartridges of 1.8 mL.
- Plastic box for 50 cartridges of 1.8 mL
- Metal container for 40 cartridges of 1.8 mL

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### 7.4. Health Certificate

INVIMA 2018M-0012697*

* According to the number of renewals the registration includes the -R designation. (For example: R1 for the first renewal, R2 for the second, and so on).

## 8. STORAGE CONDITIONS

### 8.1. Storage cautions

Keep out of reach of children. Do not administer if the solution is not clear, contains particles or sediment in the solution.

The injectable product Procaine Hydrochloride 1% must be stored in a place protected from sunlight, heat or intense light sources. Store at a temperature below 30 °C. Do not freeze.

### 8.2. Period of validity

Shelf life of 2 years from the date of manufacture.

### 8.3. incompatibilities

Do not store together with alcohols or acrylic monomers.

The Procaine Hydrochloride is incompatible with alkali hydroxides and their carbonates. It is the same, incompatible with Penicillin G, due to the formation of an insoluble salt.

Local anesthetics, such as the procaine Hydrochloride, precipitated with Amphotericin B.