Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

TECHNICAL DATA SHEET LIDOCAINE 2% SP
DPFTPT-115

1. PRODUCT OVERVIEW

1.1. Brand name

Lidocaine 2% SP

1.2. Generic name

Lidocaine Hydrochloride 2% injectable solution

1.3. Dosage form

Injectable solution

1.4. Description

Lidocaine 2% is an injectable solution for dental use that contains Lidocaine Hydrochloride as an active ingredient in a 2% concentration as an anesthetic effect generator.

Lidocaine Hydrochloride is an amide-type anesthetic agent that provides anesthesia with a short latency time, rapid spread to surrounding tissues, and short duration for simple dental procedures.

2. COMPOSITION INFORMATION

2.1. Active pharmaceutical ingredients

The active ingredients of the Lidocaine 2% product are described below:

COMPONENT	CONCENTRATION	QUANTITY PER CARTRIDGE 1,8 mL
Lidocaine Hydrochloride	20 mg/mL	36 mg

2.2. Non-active pharmaceutical ingredients

The excipients of the Lidocaine 2% product are described below:

COMPONENTS
Sodium Chloride
Sodium Hydroxide
Water for injection

3. PRODUCT PROPERTIES

3.1. Physical-chemical properties

Creation date		Written by:	Reviewed by:	
2010-01-08		Pharmaceutical Analyst	Anesthetics Quality Assurance coord	
Class	**Page**	**Approved by:**	**Actualization date:**	**Version**
E	1 of 14	Anesthetics Technical Director	2024-12-09	05

REFERENCE DOCUMENT: DPDDPR-019
FECHA DE ACTUALIZACIÓN: 2024-01-29
VERSIÓN: 03

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

PROPERTIES	VALUE
Appearance	Clear, colorless solution
Odor	Odorless
Stage	Liquid
Volume	1,8 mL
Density	~ 1,0 g/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 / Anesthesia / Local anesthesia / Amides / Lidocaine, ATC cod: N01BB02

Mechanism of Action and Pharmacodynamic Effects: Lidocaine Hydrochloride, an amide local anesthetic, reversibly blocks nerve conduction through a known mechanism that has been commonly observed with other amide local anesthetics. This consists of the decrease or prevention of the large transient increase in the permeability of excitable membranes to sodium (Na^+), which is normally produced by a slight depolarization of the membrane. This produces an anesthetic action. As the anesthetic action progressively develops in the nerve, the threshold of electrical excitability gradually increases, the rate of action potential rise decreases, and impulse conduction slows.

Clinical efficacy and safety: Used as a dental anesthetic, Lidocaine Hydrochloride 2% solutions have a latency time of 1 to 3 minutes, a duration of pulpal anesthesia of 10 minutes to 30 minutes.

No difference in pharmacodynamic properties was observed between the adult and pediatric population.

Pharmacokinetic properties

Absorption: Plasma levels depend on the site and method of administration. However, there is little relationship between the amount of local anesthetic injected and peak plasma levels. Peak concentrations are reached within the last 30 minutes, in most patient's peak concentrations are achieved within 10-20 minutes.

Distribution: Lidocaine binds to plasma proteins, including alpha-1 acid glycoprotein (AAG) and albumin. The degree of binding is variable but is approximately 66%. The drug crosses the blood-brain and placental barriers, probably as a result of passive diffusion. The plasma level of AAG in neonates is low and the free fraction of biologically active lidocaine in neonates is relatively high.

Biotransformation: Lidocaine is metabolized in the liver and approximately 90% of a dose undergoes N-

dealkylation to form monoethylglycinexylidide (MEGX) and glycinexylidide (GX), which may contribute to the therapeutic and toxic effects of lidocaine. The pharmacological and toxic effects of MEGX and GX are comparable, but less intense than those of lidocaine. Glycinexylidide has a longer half-life (approximately 10 hours) than lidocaine and can accumulate with chronic administration.

Further metabolism occurs and the metabolites are excreted in the urine with less than 10% unchanged lidocaine. Results with human liver microsomes and recombinant human CYP isoforms demonstrated that CYP1A2 and CYP3A4 enzymes are the main CYP isoforms involved in the N-deethylation of lidocaine.

Elimination: The elimination half-life is 1.5 – 2 hours in adults and approximately 3 hours in neonates. Elimination half-life may be increased in severe heart failure (up to 4-12 hours) or chronic liver disease (up to 4.5-6 hours). The half-lives of the active metabolites monoethylglycine xylidide (MEGX) and glycine xylidide (GX) are 2-6 hours and 10 hours, respectively.

Its plasma half-lives are longer than those of lidocaine, accumulation of metabolites, particularly GX, may occur during prolonged infusion. Additionally, the rate of elimination is pH dependent; can be increased by acidifying the urine. Plasma clearance is approximately 0.95 mL/min.

4. USAGE AND APLICATIONS

4.1. Indications

Local and locoregional anesthesia in dental procedures. Lidocaine Hydrochloride 2% is indicated in adults, adolescents, and children.

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 (degree of muscle relaxation and the patient's condition) and the technique and depth of anesthesia. The lowest dose that produces efficient anesthesia should be used. The necessary dose must be determined individually.

The maximum recommended dose of Lidocaine Hydrochloride is 7 mg/kg body weight for a healthy 70 kg adult. The total dose injected in all areas, distributed in a dental session, must not exceed the absolute maximum dose of 500 mg of Lidocaine Hydrochloride, whichever is the smaller of both amounts (8.9 cartridges of 1.8 ml). The recommended dose for procedures is 200 mg.

Pediatric patients

Special caution should be exercised when treating children under 4 years of age. The amount to be injected should be determined by the age and weight of the child and the extent of the operation. The anesthesia technique must be chosen meticulously. Painful anesthesia techniques should be avoided. The behavior of children during treatment must be carefully supervised.

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

The average dose to be used is in the range of 20 mg to 30 mg of lidocaine hydrochloride per session. The mean dose in mg of Lidocaine Hydrochloride that can be administered to children can be calculated by multiplying the child's weight (in kilograms) by 1.33. The equivalent of 5 mg of Lidocaine Hydrochloride per kilogram of body weight should not be exceeded.

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

Elderly patients:

In the case of elderly patients, the doses are calculated individually according to the age and body weight of the patients. Dosages may need to be adjusted as cardiac output and hepatic blood flow decline with advancing age, indicating decreased clearance of Lidocaine Hydrochloride.

Patients with renal insufficiency:

Patients should be monitored since renal insufficiency may cause toxic effects due to the accumulation of active metabolites. Dose adjustment may be necessary due to decreased clearance and increased half-life of lidocaine.

Patients with hepatic insufficiency:

The dose may have to be halved in patients with heart or hepatic insufficiency.

Patients with heart failure:

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

Other special populations:

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

4.3. Interactions

Interactions with Lidocaine Hydrochloride

- Other local anesthetics:

Lidocaine Hydrochloride should be used with caution in patients treated concomitantly with other products for local anesthesia, since the toxic effects are additive (risk of overdose).

The total dose of lidocaine administered should not exceed the maximum recommended dose.

- Antiarrhythmics Class I

Simultaneous administration of lidocaine and other class I antiarrhythmics should be avoided due to the risk of serious cardiac adverse effects.

- Muscle relaxants

The effect of muscle relaxants (eg suxamethonium) is prolonged by lidocaine hydrochloride.

- Opioid sedatives:

In case of concomitant administration, reduced doses of Lidocaine 2% should be used due to the possible additive depressant effect on the central nervous system of Lidocaine Hydrochloride and sedatives.

- CYP3A4 and CYP1A2 inhibitors:

Lidocaine Hydrochloride is metabolized mainly by the enzyme CYP1A2 and CYP3A4. Inhibitors of these cytochromes (eg, ciprofloxacin, enoxacin, fluvoxamine, amiodarone, cimetidine) may decrease their metabolism, increase the risk of adverse effects, and contribute to prolonged or toxic blood levels of lidocaine. Increased serum levels of amide anesthetics have also been reported after concomitant administration of cimetidine, probably due to the inhibitory effect of cimetidine on CYP1A2 and CYP3A4.

- Nonselective β-adrenergic blocking agents

They can increase plasma concentrations of Lidocaine Hydrochloride by reducing hepatic blood flow and inhibiting CYP1A2. Caution should be exercised when Lidocaine Hydrochloride and non-selective β-blockers are administered concomitantly.

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 sometime 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 Lidocaine Hydrochloride:

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

Symptoms are dose dependent and progressive in severity in the range of neurological manifestations (presyncope, syncope, headache, restlessness, agitation, confusional state, disorientation, dizziness, tremor, stupor, profound CNS depression, loss of consciousness, coma, speech disturbances), vertigo, balance disturbances), ocular manifestations (mydriasis, blurred vision, accommodation disorder), followed by vascular toxicity (pallor, respiratory arrest) and finally cardiac (cardiac arrest, myocardial depression) Acidosis exacerbates the toxic effects of local anesthetics.

4.5. Safety data

HEALTH	ENVIRONMENT	PHISICAL
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 ingredient, Lidocaine Hydrochloride, or to any of the excipients.
- Hypersensitivity to any local anesthetic agent.

Symptoms due to Lidocaine Hydrochloride.

- Severe cardiac conduction disorders (eg severe bradycardia, second and third degree AV block);
- Acute intermittent porphyria.
- Epileptic patient with insufficient control.

4.7. Warnings

Patients with cardiovascular disorders:

- Peripheral vascular disease
- Arrhythmias, especially of ventricular origin.
- Heart failure.
- Hypotension.

The product should be administered with caution to patients with heart failure as they may be less able to compensate for changes due to atrioventricular canal prolongation.

Patients with epileptic disease:

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

Patients with liver disease:

The lowest dose that produces effective anesthesia should be used.

Patients with kidney disease:

The lowest dose that produces effective anesthesia should be used.

Patients with coagulopathies:

The increased risk of bleeding after accidental puncture of blood vessels and during maxillofacial surgery should be considered. INR monitoring should be used in patients taking anticoagulants.

Older 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 into the systemic circulation, inadvertent intravenous or intra-arterial injection into the head and neck area) may cause serious adverse reactions such as convulsions followed by nervous system depression. central or cardiorespiratory depression and coma, which evolve at term into respiratory arrest due to the rapid rise in levels of Lidocaine Hydrochloride 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 Lidocaine Hydrochloride.

Risk associated with treatment with antiarrhythmics:

Patients treated with class III antiarrhythmic drugs (eg amiodarone) should be closely monitored, and ECG monitoring should be considered as the cardiac effects of lidocaine and class III antiarrhythmic drugs may be cumulative.

4.9. Fertility, pregnancy and lactation

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

Pregnancy

Lidocaine Hydrochloride crosses the placenta. There is no evidence that lidocaine causes alterations in the reproductive process, such as an increased incidence of malformations, or that it has a direct or indirect effect on the fetus. Animal studies revealed no evidence of harm to the fetus. However, it should not be used during pregnancy unless the benefits are considered to outweigh the risks.

Lidocaine Hydrochloride administered by epidural or paracervical blockade, especially at high doses, or by local perineal infiltration before delivery, passes rapidly into the fetal circulation. Elevated levels of lidocaine may persist in the newborn for at least 48 hours after delivery. Fetal or neonatal bradycardia, hypotonia, or respiratory depression may occur.

Lactation

Lidocaine Hydrochloride and its metabolites are excreted in human milk, but at therapeutic doses, no effects on newborns and nursing infants are anticipated. This product can be used during lactation.

Fertility

Human data on the effect of lidocaine on fertility are not available.

4.10. Side effects

Adverse reactions after administration are similar to those seen with other amide-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 CLASSIFICATION BY ORGANS AND SYSTEMS	FRECUENCY	SIDE EFFECTS
Immune system disorders	Rare	Hypersensitivity reactions Urticaria Edema Bronchospasm Respiratory distress Anaphylactic shock
Psychiatric disorders	Very frequent	Dysphoria

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

	Frequent	Confusion Concern Irritability Euphoria Hallucinations Depression
Nervous system disorders	Frequent	Transient neurological symptoms Drowsiness Dizziness Vertigo Dysarthria Tinnitus Shaking Tingling sensation and paresthesia (skin) Blurry vision
	Infrequent	CNS toxicity symptoms: Paresthesia Paresis to paraplegia of the lower limbs Loss of sphincter control (eg, cauda equina syndrome) Headache Tinnitus Photophobia Cranial nerve injuries Sensorineural deafness Vertigo
	Rare	Muscle spasms Generalized seizures Decreased level of consciousness Coma.
	Not known	Horner Syndrome[1]
Eye disorders	Rare	Ptosis of the eyelids, exophthalmos Diplopia (paralysis of the oculomotor muscles) Amaurosis Mydriasis Miosis Visual impairment Blurry vision Adjustment disorders
Ear and labyrinth disorders	Rare	Vertigo

	Very rare	Tinnitus / Hyperacusis
Heart disorders	Rare	Bradycardia Auriculoventricular block Heart attack
	Very rare	Ventricular tachycardia
Vascular disorders	Infrequent	Hypotension (with possible circulatory collapse)
	Rare	Vasodilation Hot flushes
Respiratory, thoracic and mediastinal disorders	Rare	Respiratory depression
Gastrointestinal disorders	Very frequent	Nausea Threw up Dysphagia
Skin and subcutaneous tissue disorders	Rare	Angioedema [2] (edema of the face / tongue / lip / throat / larynx / periorbital edema) Urticaria
	Very rare	Facial swelling
General disorders and administration site conditions	Rare	Shaking chills[3]
Traumatic injuries, intoxications, and complications of the intervention	Rare	Trauma Transient root irritation Spinal cord compression after hematoma Development

[1]Associated with epidural anesthesia or applications in the head and neck region

[2]Angioedema includes edema of the face/tongue/lips/throat/larynx/periorbital. Laryngopharyngeal edema may characteristically occur in conjunction with hoarseness or dysphagia.

[3].Especially after epidural administration.

5. QUALITY ASSUREMENT

The Lidocaine 2% product is manufactured under the strictest technical and quality controls, its production process is carried out in special manufacturing areas that have environmental, microbiological, and operational controls, it is carried out by previously trained and trained personnel to this type of process. 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:

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

TECHNICAL DATA SHEET LIDOCAINE 2% SP
DPFTPT-115

PARAMETER	ESPECIFICATION	REFERENCE
Physico-chemical		
Description	Transparent liquid, colorless	USP
Color and transparency	The sample solution does not show a pinkish color or precipitates. The absorbance of the sample solution does not exceed the absorbance of the standard solution	USP
Particulate		
Visible	Each cartridge 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	5,0 – 7,0	USP
Instrumental		
Identification		
Lidocaine Hydrochloride	The Lidocaine retention times of the Sample solution correspond to those of the Standard solution, as obtained in the Lidocaine Hydrochloride Assay.	USP
	The IR spectrum of the preparation obtained from the test sample exhibits peaks only at the same wavelengths as the standard solution.	USP
Assay		
Lidocaine Hydrochloride	95%-105%	USP
Microbiological		
Mesophiles	No growth of microorganisms	USP
Fungi and Yeasts	No growth of microorganisms	USP

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

Bacterial endotoxins	≤1.1 USP EU/mg of Lidocaine HCl equivalent to 22 EU/mL of injectable solution	USP

6. INSTRUCTIONS

6.1. Preparations 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 Lidocaine Hydrochloride 2% 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 is adequately trained and familiar with the diagnosis and treatment of systemic toxicity. The patient's state of consciousness should be monitored after each injection of local anesthesia.

When using Lidocaine Hydrochloride 2% 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 been in contact with it will be done in accordance with local regulations.

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 injection of local anesthesia. 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.

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

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.
- Type I borosilicate glass cartridge with aluminum clip and Chlorobutyl liner and with Bromobutyl plunger
- Polypropylene cartridge with aluminum clip and Chlorobutyl liner and with Natural Rubber Plunger.

7.2. Nature of secondary packaging.

- Blister of PET material sealed with propalcote paper in a cardboard box
- Polypropylene 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.
- Metal container for 50 cartridges of 1.8 mL.

7.4. Health certificate

INVIMA 2016M-004009*

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

Dirección: Cra. 53 N° 50-09
Guarne (Antioquia) COLOMBIA.
Teléfonos: (57-60-4) 550 00 00 - 403 87 60
Fax: (57-60-4) 551 31 34
infocolombia@newstetic.com

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 Lidocaine Hydrochloride 2% 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 3 years from the date of manufacture.

8.3. Incompatibilities

Do not store together with alcohols or acrylic monomers.