

# Adrenalin® Chloride Solution

(Epinephrine Injection, USP) 1:1000

3000390B

## DESCRIPTION

A sterile solution intended for subcutaneous or intramuscular injection. When diluted, it may also be administered intracardially or intravenously. It may also be administered intraspinally by adding to anesthetic spinal fluid mixture. Each milliliter contains 1 mg Adrenalin (epinephrine) as the hydrochloride dissolved in Water for Injection, USP, with sodium chloride added for isotonicity.

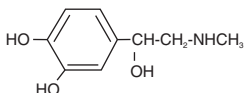
### 1 mL Vial

Contains not more than 0.1% sodium bisulfite as an antioxidant, and the air in the vial has been displaced by nitrogen.

### 30 mL Vial

Contains 0.5% Chlorobutanol (chloroform derivative) as a preservative and not more than 0.15% sodium bisulfite as an antioxidant.

Epinephrine is the active principle of the adrenal medulla, chemically described as (—)-3,4-Dihydroxy- $\alpha$ -[(methylamino) methyl] benzyl alcohol, and has the following structural formula:



## CLINICAL PHARMACOLOGY

Adrenalin (epinephrine) is a sympathomimetic drug. It activates an adrenergic receptive mechanism on effector cells and imitates all actions of the sympathetic nervous system except those on the arteries of the face and sweat glands. Epinephrine acts on both alpha and beta receptors and is the most potent alpha receptor activator.

## INDICATIONS AND USAGE

In general, the most common uses of epinephrine are to relieve respiratory distress due to bronchospasm, to provide rapid relief of hypersensitivity reactions to drugs and other allergens, and to prolong the action of infiltration anesthetics. Its cardiac effects may be of use in restoring cardiac rhythm in cardiac arrest due to various causes, but it is not used in cardiac failure or in hemorrhagic, traumatic, or cardiogenic shock.

Epinephrine is used as a hemostatic agent. It is also used in treating mucosal congestion of hay fever, rhinitis, and acute sinusitis; to relieve bronchial asthmatic paroxysms; in syncope due to complete heart block or carotid sinus hypersensitivity; for symptomatic relief of serum sickness, urticaria, angioneurotic edema; for resuscitation in cardiac arrest following anesthetic accidents; in simple (open angle) glaucoma; for relaxation of uterine musculature and to inhibit uterine contractions. Epinephrine injection can be utilized to prolong the action of intraspinal and local anesthetics (see **CONTRAINDICATIONS** section).

## CONTRAINDICATIONS

Epinephrine is contraindicated in narrow angle (congestive) glaucoma, shock, during general anesthesia with halogenated hydrocarbons or cyclopropane and in individuals with organic brain damage. Epinephrine is also contraindicated with local anesthesia of certain areas, e.g., fingers, toes, because of the danger of vasoconstriction producing sloughing of tissue; in labor because it may delay the second stage; in cardiac dilatation and coronary insufficiency.

## WARNINGS

Administer with caution to elderly people; to those with cardiovascular disease, hypertension, diabetes, or hyperthyroidism; in psychoneurotic individuals; and in pregnancy.

Patients with long-standing bronchial asthma and emphysema who have developed degenerative heart disease should be administered the drug with extreme caution.

Overdosage or inadvertent intravenous injection of epinephrine may cause cerebrovascular hemorrhage resulting from the sharp rise in blood pressure.

Fatalities may also result from pulmonary edema because of the peripheral constriction and cardiac stimulation produced. Rapidly acting vasodilators, such as nitrites, or alpha blocking agents may counteract the marked pressor effects of epinephrine.

Epinephrine is the preferred treatment for serious allergic or other emergency situations even though this product contains sodium bisulfite, a sulfite that may in other products cause allergic-type reactions including anaphylactic symptoms or life-threatening or less severe asthmatic episodes in certain susceptible persons. The alternatives to using epinephrine in a life-threatening situation may not be satisfactory. The presence of a sulfite in this product should not deter administration of the drug for treatment of serious allergic or other emergency situations.

## PRECAUTIONS

**General:** Adrenalin (epinephrine injection, USP) should be protected from exposure to light. The solution should not be used if it is pinkish or darker than slightly yellow or if it contains a precipitate.

Epinephrine is readily destroyed by alkalis and oxidizing agents. In the latter category are oxygen, chlorine, bromine, iodine, permanganates, chromates, nitrites, and salts of easily reducible metals, especially iron.

**Drug Interactions:** Use of epinephrine with excessive doses of digitalis, mercurial diuretics, or other drugs that sensitize the heart to arrhythmias is not recommended. Anginal pain may be induced when coronary insufficiency is present.

The effects of epinephrine may be potentiated by tricyclic antidepressants; certain antihistamines, e.g., diphenhydramine, tripeleminamine, d-chlorpheniramine; and sodium l-thyroxine.

**Usage in Pregnancy:** Pregnancy Category C. Adrenalin (epinephrine) has been shown to be teratogenic in rats when given in doses about 25 times the human dose. There are no adequate and well-controlled studies in pregnant women. Adrenalin should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

## ADVERSE REACTIONS

Transient and minor side effects of anxiety, headache, fear, and palpitations often occur with therapeutic doses, especially in hyperthyroid individuals. Repeated local injections can result in necrosis at sites of injection from vascular constriction. "Epinephrine-fastness" can occur with prolonged use.

## DOSAGE AND ADMINISTRATION

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

Vial and contents must be discarded 30 days after initial use.

Subcutaneously or intramuscularly—0.2 to 1 mL (mg). Start with a small dose and increase if required.

Note: The subcutaneous is the preferred route of administration. If given intramuscularly, injection into the buttocks should be avoided.

For bronchial asthma and certain allergic manifestations, e.g., angioedema, urticaria, serum sickness, anaphylactic shock, use epinephrine subcutaneously. For bronchial asthma in pediatric patients, administer 0.01 mg/kg or 0.3 mg/m<sup>2</sup> to a maximum of 0.5 mg subcutaneously, repeated every four hours if required.

For cardiac resuscitation—A dose of 0.5 mL (0.5 mg) diluted to 10 mL with sodium chloride injection can be administered intravenously or intracardially to restore myocardial contractility. External cardiac massage should follow intracardial administration to permit the drug to enter coronary circulation. The drug should be used secondarily to unsuccessful attempts with physical or electromechanical methods.

Ophthalmologic use (for producing conjunctival decongestion, to control hemorrhage, produce mydriasis and reduce intraocular pressure)—Use a concentration of 1:10,000 (0.1 mg/mL) to 1:1,000 (1 mg/mL).

Intraspinal use—Usual dose is 0.2 to 0.4 mL (0.2 to 0.4 mg) added to anesthetic spinal fluid mixture (may prolong anesthetic action by limiting absorption). For use with local anesthetic—Epinephrine 1:100,000 (0.01 mg/mL) to 1:20,000 (0.05 mg/mL) is the usual concentration employed with local anesthetics.

## HOW SUPPLIED

NDC 42023-122-25 Sterile solution containing 1 mg Adrenalin (epinephrine) as the hydrochloride in each 1-mL vial (1:1000). For intramuscular or subcutaneous use. When diluted, it may also be administered intracardially or intravenously. It may also be administered intraspinally by adding to anesthetic spinal fluid mixture. Supplied in packages of twenty-five.

NDC 42023-101-01 Sterile solution containing 1 mg Adrenalin (epinephrine) as the hydrochloride (1:1000). For intramuscular or subcutaneous use. When diluted, it may also be administered intracardially or intravenously. It may also be administered intraspinally by adding to anesthetic spinal fluid mixture. Supplied in a 30-mL (rubber-diaphragm-capped vial).

**Store between 15° and 25°C (59° and 77°F).**

**Protect from light and freezing.**

**Rx Only.**

Prescribing Information as of February 2008.



Manufactured and Distributed by:  
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