

**Adrenaline (Epinephrine) Injection BP 1 in 1000  
1ml, Glass ampoules**

PL 02848/0210

Summary of Product Characteristics

Antigen International Ltd.  
Roscrea  
Co. Tipperary  
Ireland

## Summary of Product Characteristics

### **Product Name: Adrenaline (Epinephrine) Injection BP 1 in 1000**

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**PRODUCT NAME: ADRENALINE INJECTION BP 1 IN 1000**

Summary of Product Characteristics

**1. TRADE NAME OF THE MEDICINAL PRODUCT**

Adrenaline (Epinephrine) Injection BP 1 in 1000

**2. QUALITATIVE AND QUANTITATIVE COMPOSITION**

Each ml of solution for injection contains 1 mg of adrenaline (epinephrine) as the acid tartrate.

**3. PHARMACEUTICAL FORM**

Sterile Solution for parenteral use.

**4. CLINICAL PARTICULARS**

**4.1 Therapeutic Indications**

Emergency treatment of severe, acute allergic reactions including anaphylactic shock by intramuscular injection.

**4.2 Posology and Method of Administration**

Treatment of Severe, Acute Allergic Reactions Including Anaphylactic Shock.

*I.M. Injection:*

*Adults:* The usual dose is 500 micrograms (0.5 ml of adrenaline 1/1000). If necessary, this dose may be repeated several times at 5-minute intervals according to blood pressure, pulse and respiratory function.

Half doses of adrenaline may be safer for patients who are taking amitriptyline, imipramine or a beta blocker.

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**4. CLINICAL PARTICULARS**

**4.2 Posology and Method of Administration cont/d.**

*Children:* The following doses of adrenaline 1/1,000 are recommended:

Age	Dose
Over 12 years	500 micrograms (0.5 ml) 250 micrograms (0.25 ml) if child is small or prepubertal
6 – 12 years	250 micrograms (0.25 ml)
6 months – 6 years	120 micrograms (0.12 ml)
Under 6 months	50 micrograms (0.05 ml)

If necessary, these doses may be repeated several times at 5-minute intervals according to blood pressure, pulse and respiratory function.

**4.3 Contra-indications**

- 1) Use during labour
- 2) Use with local anaesthesia of peripheral structures including digits, ear lobe.
- 3) Use in the presence of ventricular fibrillation, cardiac dilatation, coronary insufficiency, organic brain disease or atherosclerosis, except in emergencies where the potential benefit clearly outweighs the risk.
- 4) Use if solution is discoloured.

**4.4 Special Warnings and Special Precautions for Use**

Adrenaline should only be administered with great caution in the elderly or those with cardiovascular disease (including hypertension and ischaemic heart disease), hyperthyroidism, diabetes mellitus, closed-angle glaucoma, or in patients with long standing asthma or emphysema who have reached an age at which degenerative heart disease is prevalent.

Repeat administration may produce local necrosis at the sites of injection.

Prolonged administration may produce metabolic acidosis, renal necrosis and adrenaline fastness or tachyphylaxis.

Adrenaline should be avoided or used with extreme caution in patients undergoing anaesthesia with halothane or other halogenated anaesthetics, in view of the risk of inducing ventricular fibrillation.

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**4. CLINICAL PARTICULARS**

**4.4 Special Warnings and Special Precautions for Use cont/d.**

Do not mix with other agents unless compatibility is known.

**4.5 Interactions with other Medicaments and other forms of Interaction**

Concurrent use with tricyclic antidepressants, digitalis glycosides, parenterally used diuretics, guanethidine, methyldopa, reserpine or other similar agents may potentiate the effects of adrenaline. Beta-blockers, especially non-selective ones, increase the pressor effect and decrease the bronchodilatory effect of adrenaline.

Adrenaline should be avoided or used with extreme caution in patients undergoing anaesthesia with halothane or other halogenated anaesthetics in view of the risk of inducing ventricular fibrillation.

**4.6 Pregnancy and Lactation**

The use of adrenaline in pregnancy has been associated with slightly increased incidence of congenital malformations. In addition, infusion of adrenaline in pregnant women produces foetal tachycardia, cardiac irregularities, extrasystoles and louder heart sounds. The use of adrenaline in pregnancy should therefore only be considered when the potential benefit to the mother outweighs the risk to the foetus.

The use of adrenaline in breast feeding mothers is not contraindicated since pharmacologically active plasma concentrations are not achieved by the oral route.

**4.7 Effects on ability to Drive and use Machines**

None stated.

**4.8 Undesirable Effects**

In therapeutic doses adrenaline may cause effects such as anxiety, fear, dry mouth, tremor, headache, palpitations, arrhythmias, hypertension, along with restlessness and coldness of extremities. Headache is most common. Other effects that may occur include difficulty in micturition and urinary retention, dyspnoea, altered metabolism including disturbances of glucose metabolism, sweating and hypersalivation.

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**4. CLINICAL PARTICULARS**

**4.8 Undesirable Effects cont/d.**

Central effects of sympathomimetic agents also include insomnia, confusion, irritability, weakness and psychotic states. Appetite may be reduced and nausea and vomiting may occur.

**4.9 Overdose**

Overdosage may cause cardiac arrhythmias, cerebral haemorrhage and pulmonary oedema. Suggested measures to counteract the effects are:

- i) Combined  $\alpha$  and  $\beta$  adrenergic blockage using labetalol.
- ii)  $\beta$ -adrenoceptor blocker to block supraventricular arrhythmias.
- iii) Phentolamine to control  $\alpha$  effects on the peripheral circulation.

Rapid acting vasodilators (nitrates or sodium nitroprusside) may also be helpful if specific antagonists are not available. Ventricular fibrillation is usually fatal, so immediate resuscitation support must be provided.

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**5. PHARMACOLOGICAL PROPERTIES**

**5.1 Pharmacodynamic Properties**

Adrenaline is the active principle of the adrenal medulla, which is used as a direct-acting sympathomimetic agent. It has a somewhat more marked effect on beta – than on alpha-adrenoceptors.

Major pharmacological effects include increased speed and force of cardiac contraction, increased blood flow to skeletal muscle (reduced with higher doses), increased glucose output, increased oxygen consumption and reduced blood flow in the kidneys, mucosa and the skin. There is little direct effect on cerebral blood flow.

Aqueous solutions of adrenaline are used in the treatment of anaphylaxis (0.5 – 1.0ml of a 1 in 1000 solution, administered I.M.) and in the treatment of cardiac arrest (1mg i.e. 10ml of a 1 in 10000 solution, administered I.V.).

**5.2 Pharmacokinetic Properties**

Adrenaline acts rapidly following intramuscular injection, although absorption is slowed by local vasoconstriction.

Adrenaline is rapidly taken up by the heart, spleen, several glandular tissues and adrenergic nerves. Adrenaline readily crosses the placenta. Adrenaline is approximately 50% bound to plasma proteins.

Adrenaline is metabolised in the liver and body tissues by oxidative deamination and o-methylation. 73 – 95% of an intravenous dose is excreted in the urine, of the excreted material about 80% is excreted as o-methyl metabolites and 2% catechol metabolites and only 1% is excreted as unchanged drug.

**5.3 Preclinical Safety Data**

None stated.

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**6. PHARMACEUTICAL PARTICULARS**

**6.1 List of Excipients**

Sodium Metabisulphite

Sodium Chloride

Sodium Hydroxide

Hydrochloric Acid

Water for Injections

**6.2 Incompatibilities**

Adrenaline and adrenaline acid tartrate are incompatible with oxidising agents, alkalis (e.g. sodium bicarbonate), 5% sodium chloride, copper, iron, silver, zinc and other metals, gum and tannin. Adrenaline reactions with salts of sulphurous acid to form a derivative of sulphuric acid which is biologically inactive.

Adrenaline is unstable in 5% dextrose at a pH above 5.5.

**6.3 Shelf life**

24 months.

**6.4 Special Precautions for Storage**

Do not store above 25°C.

Keep in outer carton.

**6.5 Nature and contents of container**

1ml neutral glass (type 1) ampoules in packs of 5, 10 and 100.

**6.6 Instructions for Use/Handling**

None stated.

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Administrative Details

**7. NAME AND ADDRESS OF MARKETING AUTHORISATION HOLDER**

Antigen International Limited  
Roscrea  
Co. Tipperary  
Ireland

**8. MARKETING AUTHORISATION NUMBER**

PL 02848/0210.

**9. DATE OF FIRST AUTHORISATION/RENEWAL OF AUTHORISATION**

03 April 2000.

**10. DATE OF (PARTIAL) REVISION OF THE TEXT**

July 2004.

