

# Summary of Product Characteristics

## 1 NAME OF THE MEDICINAL PRODUCT

Tranexamic Acid 100 mg/ml solution for injection/infusion

## 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each 1 ml of solution contains 100 mg of tranexamic acid.

Each 5 ml of solution contains 500 mg of tranexamic acid.

Each 10 ml of solution contains 1 g of tranexamic acid.

Excipient with known effect: Contains less than 1mmol sodium per dose.

For a full list of excipients, see section 6.1.

## 3 PHARMACEUTICAL FORM

Solution for injection/infusion

Clear solution free of particles in a colourless glass ampoule.

pH 6.5 - 8.0

## 4 CLINICAL PARTICULARS

### 4.1 Therapeutic Indications

Prevention and treatment of haemorrhages due to general or local fibrinolysis in adults and children from one year.

Specific indications include:

- Haemorrhage caused by general or local fibrinolysis such as:
- Menorrhagia and metrorrhagia
- Gastrointestinal bleeding
- Haemorrhagic urinary disorders, further to prostate surgery or surgical procedures affecting the urinary tract
- Ear Nose Throat surgery (adenoidectomy, tonsillectomy, dental extractions)
- Gynaecological surgery or disorders of obstetric origin
- Thoracic and abdominal surgery and other major surgical intervention such as cardiovascular surgery
- Management of haemorrhage due to the administration of a fibrinolytic agent

### 4.2 Posology and method of administration

#### Posology

##### *Adults*

Unless otherwise prescribed, the following doses are recommended:

1. Standard treatment of local fibrinolysis:

0.5 g (1 ampoule of 5 ml) to 1 g (1 ampoule of 10 ml or 2 ampoules of 5 ml) tranexamic acid by slow intravenous injection (= 1 ml/minute) two to three times daily

2. Standard treatment of general fibrinolysis:

1 g (1 ampoule of 10 ml or 2 ampoules of 5 ml) tranexamic acid by slow intravenous injection (= 1 ml/minute) every 6 to 8 hours, equivalent to 15 mg/kg BW

##### *Patients with renal impairment*

In renal insufficiency leading to a risk of accumulation, the use of tranexamic acid is contraindicated in patients with severe renal impairment (see section 4.3). For patients with mild to moderate renal impairment, the dosage of tranexamic acid should be reduced according to the serum creatinine level:

Serum creatinine		Dose IV	Administration
µmol/l	mg/10 ml		
120 to 249	1.35 to 2.82	10 mg/kg BW	Every 12 hours
250 to 500	2.82 to 5.65	10 mg/kg BW	Every 24 hours
> 500	> 5.65	5 mg/kg BW	Every 24 hours

*Patients with hepatic impairment*

No dose adjustment is required in patients with hepatic impairment.

*Paediatric Population:*

In children from 1 year, for current approved indications as described in section 4.1, the dosage is in the region of 20 mg/kg/day. However, data on efficacy, posology and safety for these indications are limited.

The efficacy, posology and safety of tranexamic acid in children undergoing cardiac surgery have not been fully established. Currently available data are limited and are described in section 5.1.

*Elderly:*

No reduction in dosage is necessary unless there is evidence of renal failure.

Method of administration

The administration is strictly limited to slow intravenous injection or infusion (see section 6.6) of maximum 1ml per minute.

**4.3 Contraindications**

- Hypersensitivity to the active substance or to any of its excipients listed in section 6.1
- Acute venous or arterial thrombosis (see section 4.4)
- Fibrinolytic conditions following consumption coagulopathy except in those with predominant activation of the fibrinolytic system with acute severe bleeding (see section 4.4)
- Severe renal impairment (risk of accumulation)
- History of convulsions
- Intrathecal and intraventricular injection, intracerebral application (risk of cerebral oedema and convulsions).

**4.4 Special warnings and precautions for use**

The indications and method of administration indicated above should be followed strictly:

- Intravenous injections or infusions should be given very slowly (maximum 1ml per minute)
- Tranexamic acid should not be administered by the intramuscular route

Convulsions

Cases of convulsions have been reported in association with tranexamic acid treatment. In coronary artery bypass graft (CABG) surgery, most of these cases were reported following intravenous (i.v.) injection of tranexamic acid in high doses. With the use of the recommended lower doses of tranexamic acid, the incidence of post-operative seizures was the same as that in untreated patients.

Visual disturbances

Attention should be paid to possible visual disturbances including visual impairment, vision blurred, impaired colour vision and if necessary the treatment should be discontinued. With continuous long-term use of tranexamic acid, regular ophthalmologic

examinations (eye examinations including visual acuity, colour vision, fundus, visual field etc.) are indicated. With pathological ophthalmic changes, particularly with diseases of the retina, the physician must decide after consulting a specialist on the necessity for the long-term use of tranexamic acid in each individual case.

#### Haematuria

In case of haematuria from the upper urinary tract, there is a risk for urethral obstruction.

#### Thromboembolic events

Before use of tranexamic acid, risk factors of thromboembolic disease should be considered. In patients with a history of thromboembolic diseases or in those with increased incidence of thromboembolic events in their family history (patients with a high risk of thrombophilia), tranexamic acid should only be administered if there is a strong medical indication after consulting a physician experienced in hemostaseology and under strict medical supervision (see section 4.3).

Tranexamic acid should be administered with care in patients receiving oral contraceptives because of the increased risk of thrombosis (see section 4.5).

#### Disseminated intravascular coagulation

Patients with disseminated intravascular coagulation (DIC) should in most cases not be treated with tranexamic acid (see section 4.3). If tranexamic acid is given it must be restricted to those in whom there is predominant activation of the fibrinolytic system with acute severe bleeding. Characteristically, the haematological profile approximates to the following: reduced euglobulin clot lysis time; prolonged prothrombin time; reduced plasma levels of fibrinogen, factors V and VIII, plasminogen fibrinolysin and alpha-2 macroglobulin; normal plasma levels of P and P complex; i.e. factors II (prothrombin), VIII and X; increased plasma levels of fibrinogen degradation products; a normal platelet count. The foregoing presumes that the underlying disease state does not of itself modify the various elements in this profile. In such acute cases a single dose of 1g tranexamic acid is frequently sufficient to control bleeding. Administration of tranexamic acid in DIC should be considered only when appropriate haematological laboratory facilities and expertise are available.

#### Sodium content

This medicinal product contains less than 1mmol sodium (23mg) per dose i.e. essentially "sodium-free".

### **4.5 Interaction with other medicinal products and other forms of interactions**

No interaction studies have been performed. Simultaneous treatment with anticoagulants must take place under the strict supervision of a physician experienced in this field. Medicinal products that act on haemostasis should be given with caution to patients treated with tranexamic acid. There is a theoretical risk of increased thrombus-formation potential, such as with oestrogens. Alternatively, the antifibrinolytic action of the drug may be antagonised with thrombolytic drugs.

### **4.6 Fertility, pregnancy and lactation**

Women of childbearing potential have to use effective contraception during treatment.

#### Pregnancy

There is insufficient clinical data on the use of tranexamic acid in pregnant women. As a result, although studies in animals do not indicate teratogenic effects, as precaution for use, tranexamic acid is not recommended during the first trimester of pregnancy.

Limited clinical data of the use of tranexamic acid in different clinical haemorrhagic settings during the second and third trimesters did not identify deleterious effect for the foetus. Tranexamic acid should be used throughout pregnancy only if the expected benefit justifies the potential risk.

#### Breast-feeding

Tranexamic acid is excreted in human milk. Therefore, breast-feeding is not recommended.

#### Fertility

There are no clinical data on the effects of tranexamic acid on fertility.

#### 4.7 Effects on ability to drive and use machines

No studies have been performed on the ability to drive and use machines.

#### 4.8 Undesirable effects

The ADRs reported from clinical studies and post-marketing experience are listed below according to system organ class.

##### Tabulated list of adverse reactions

Adverse reactions reported are presented in the table below. Adverse reactions are listed according to MedDRA primary system organ class. Within each system organ class, adverse reactions are ranked by frequency. Within each frequency grouping, adverse reactions are presented in the order of decreasing seriousness. Frequencies were defined as follows: Very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ), not known (can not be estimated from the available data).

MedDRA System Organ Class	Frequency	Undesirable Effects
<b>Skin and subcutaneous tissue disorders</b>	Uncommon	Dermatitis allergic
<b>Gastrointestinal disorders</b>	Common	Diarrhoea Vomiting Nausea
<b>Nervous system disorders</b>	Not known	Convulsions particularly in case of misuse (refer to sections 4.3 and 4.4)
<b>Eye disorders</b>	Not known	Visual disturbances including impaired colour vision
<b>Vascular disorders</b>	Not known	Malaise with hypotension with or without loss of consciousness (generally following a too fast intravenous injection, exceptionally after oral administration) Arterial or venous embolism at any sites
<b>Immune system disorders</b>	Not known	Hypersensitivity reactions including anaphylaxis

##### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in [Appendix V](#).

#### 4.9 Overdose

No case of overdose has been reported.

Signs and symptoms may include dizziness, headache, hypotension, and convulsions. It has been shown that convulsions tend to occur at higher frequency with increasing dose.

Management of overdose should be supportive.

## 5 PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antihemorrhagics, Antifibrinolytics, Aminoacids

ATC code: B02AA02

Tranexamic acid exerts an anti haemorrhagic activity by inhibiting the fibrinolytic properties of plasmin.

A complex involving tranexamic acid, plasminogen is constituted; the tranexamic acid being linked to plasminogen when transformed into plasmin.

The activity of the tranexamic acid-plasmin complex on the activity on fibrin is lower than the activity of free plasmin alone.

*In vitro* studies showed that high tranexamic dosages decreased the activity of complement.

### **Paediatric population**

#### In children over one year old:

Literature review identified 12 efficacy studies in paediatric cardiac surgery which have included 1073 children, 631 having received tranexamic acid. Most of them were controlled versus placebo. Studied population was heterogenic in terms of age, surgery types, dosing schedules. Study results with tranexamic acid suggest reduced blood loss and reduced blood product requirements in paediatric cardiac surgery under cardiopulmonary bypass (CPB) where there is a high risk of haemorrhage, especially in cyanotic patients or patients undergoing repeat surgery. The most adapted dosing schedule appeared to be:

- first bolus of 10 mg/kg after induction of anaesthesia and prior to skin incision,
- continuous infusion of 10 mg/kg/h or injection into the CPB pump prime at a dose adapted on the CPB procedure, either according to a patient weight with a dose of 10 mg/kg dose, either according to CPB pump prime volume,
- last injection of 10 mg/kg at the end of CPB.

While studied in very few patients, the limited data suggest that continuous infusion is preferable, since it would maintain therapeutic plasma concentration throughout surgery.

No specific dose-effect study or pharmacokinetic study has been conducted in children.

## **5.2 Pharmacokinetic properties**

### Absorption

Peak plasma concentrations of tranexamic acid are obtained rapidly after a short intravenous infusion after which plasma concentrations decline in a multi-exponential manner.

### Distribution

The plasma protein binding of tranexamic acid is about 3% at therapeutic plasma levels and seems to be fully accounted for by its binding to plasminogen. Tranexamic acid does not bind to serum albumin. The initial volume of distribution is about 9 to 12 liters.

Tranexamic acid passes through the placenta. Following administration of an intravenous injection of 10 mg/kg to 12 pregnant women, the concentration of tranexamic acid in serum ranged 10-53 µg/mL while that in cord blood ranged 4-31 µg/mL. Tranexamic acid diffuses rapidly into joint fluid and the synovial membrane. Following administration of an intravenous injection of 10 mg/kg to 17 patients undergoing knee surgery, concentrations in the joint fluids were similar to those seen in corresponding serum samples. The concentration of tranexamic acid in a number of other tissues is a fraction of that observed in the blood (breast milk, one hundredth; cerebrospinal fluid, one tenth; aqueous humor, one tenth). Tranexamic acid has been detected in semen where it inhibits fibrinolytic activity but does not influence sperm migration.

### Elimination

It is excreted mainly in the urine as unchanged drug. Urinary excretion via glomerular filtration is the main route of elimination. Renal clearance is equal to plasma clearance (110 to 116 mL/min). Excretion of tranexamic acid is about 90% within the first 24 hours after intravenous administration of 10 mg/kg body weight. The elimination half-life of tranexamic acid is approximately 3 hours.

### Other special populations

Plasma concentrations increase in patients with renal failure.

No specific pharmacokinetic study has been conducted in children.

## **5.3 Preclinical safety data**

Non-clinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, genotoxicity, carcinogenic potential and toxicity to reproduction and development.

Epileptogenic activity has been observed in animals with intrathecal use of tranexamic acid.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections  
Sodium hydroxide  
Hydrochloric acid

### **6.2 Incompatibilities**

This medicinal product should not be mixed with blood for transfusion or with solutions containing penicillin.

### **6.3 Shelf life**

3 years

After first opening: the solution for injection/infusion is for single use only. Unused solution must be discarded. From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user.

### **6.4 Special precautions for storage**

Do not refrigerate or freeze.  
For storage conditions after first opening of the medicinal product, see section 6.3.

### **6.5 Nature and contents of container**

Type I glass 5 ml and 10ml ampoules in cardboard boxes of 1, 5, 10, 20, 50 ampoules

Not all pack sizes may be marketed

### **6.6 Special precautions for disposal**

This medicinal product may be mixed with most solutions for infusion such as electrolyte solutions, carbohydrate solutions, amino acid solutions and dextran solutions. Heparin may be added to Tranexamic Acid 100 mg/ml solution for injection/infusion.

For single use only. Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## **7 MARKETING AUTHORISATION HOLDER**

Ibigen Srl  
via Fossignano 2  
04011 Aprilia (LT)  
Italy

## **8 MARKETING AUTHORISATION NUMBER**

PA1862/002/001

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

Date of first authorisation: 5<sup>th</sup> December 2014

Date of last renewal: 16th October 2019

**10 DATE OF REVISION OF THE TEXT**

January 2020