

PRODUCT MONOGRAPH

INCLUDING PATIENT MEDICATION INFORMATION

PrMAR-TRANEXAMIC ACID

Tranexamic acid Tablets, BP

Tablet, 500 mg, Oral

BP

Anti-fibrinolytic agent

Marcan Pharmaceuticals Inc.
2 Gurdwara Road, Suite #112,
Ottawa, ON, K2E 1A2

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RECENT MAJOR LABEL CHANGES

2 CONTRAINDICATIONS	06/2022
7 WARNINGS AND PRECAUTIONS	06/2022

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PART I: HEALTH PROFESSIONAL INFORMATION

1 INDICATIONS

Mar-Tranexamic acid (tranexamic acid tablet) is indicated for:

- Hereditary angioneurotic oedema.
- Increased local fibrinolysis when the diagnosis is indicative of hyperfibrinolysis, as with conisation of the cervix, dental extraction in patients with coagulopathies (in conjunction with antihemophilic factor) epistaxis, hyphaema, and menorrhagia (hypermenorrhoea).

1.1 Pediatrics

Based on the data submitted and reviewed by Health Canada, the safety and efficacy of tranexamic acid in pediatric patients has been established for use in hereditary angioneurotic oedema and increased local fibrinolysis when the diagnosis is indicative of hyperfibrinolysis. Specific data is available for surgical patients undergoing cardiac and orthopedic surgeries. Therefore, Health Canada has authorized Mar-Tranexamic acid in these indications for pediatric use.

For menorrhagia (hypermenorrhoea), limited data are available to Health Canada. Clinical experience with tranexamic acid in menorrhagic (hypermenorrhoea) children under 18 years of age is not available. Therefore, Health Canada has not authorized Mar-Tranexamic acid for this indication for pediatric use.

1.2 Geriatrics

Clinical studies of tranexamic acid did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

2 CONTRAINDICATIONS

- Intrathecal and epidural administration of tranexamic acid is contraindicated.
- Patients with a history or risk of thrombosis should not be given Mar-Tranexamic acid (tranexamic acid), unless at the same time it is possible to give treatment with anticoagulants. The preparation should not be given to patients with acquired disturbances of colour vision. If disturbances of vision arise during the course of treatment the administration of the preparation should be discontinued.
- Patients with active thromboembolic disease, such as deep vein thrombosis, pulmonary embolism, and cerebral thrombosis.
- Patients with subarachnoid haemorrhage: the limited clinical experience shows that a reduced risk for re-bleeding is offset by an increase in the rate of cerebral ischaemia.
- Haematuria (see [7 WARNINGS and PRECAUTIONS](#))
- Mar-Tranexamic acid is contraindicated in patients who are hypersensitive to this drug or to any ingredient in the formulation, including any non-medicinal ingredient, or component of the container. For a complete listing, see [6 DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING](#).

4 DOSAGE AND ADMINISTRATION

4.1 Dosing Considerations

- Tranexamic acid blood levels are increased in patients with renal insufficiency. Dose modifications are required in patients with renal insufficiency (see [4.2 Recommended dose and Dosage Adjustment](#))
- Hypotension may occur after fast injection.
- The risk for thromboembolic events may be increased in patients using hormonal contraceptives. If Mar-Tranexamic acid has to be used in these patients, advise them to use an effective alternative (non-hormonal) contraceptive method. (see [9 DRUG INTERACTIONS](#)).

4.2 Recommended Dose and Dosage Adjustment

- Conization of the cervix: 2-3 tablets (1000-1500 mg) every 8-12 hours, 12 days post operatively
- Epistaxis: 2-3 tablets (1000-1500 mg) every 8-12 hours for 10 days
- Hypohaema: 2-3 tablets (1000-1500 mg) every 8-12 hours for 7 days
- Dental Surgery in Patients with Coagulopathies: 2 hours before the operation, Factor VIII and Factor IX should be given as well as Mar-Tranexamic acid, 25 mg/kg orally. After the operation, 25 mg/kg Mar-Tranexamic acid is given orally 3-4 times a day for 6-8 days. After the operation the patient does not generally require further substitution therapy.
- Menorrhagia (hypermenorrhea): 2-3 tablets (1000-1500 mg), 3-4 times a day for several days. Mar-Tranexamic acid treatment should only be started when copious bleeding has begun.
- Hereditary angioneurotic oedema: Some patients can sense the onset of attacks and are best treated intermittently with 2-3 tablets (1000-1500 mg), 2-3 times a day for several days. Others should be treated continuously with this dose.
- Pediatrics: Dosage should be calculated according to body weight at 25 mg/kg orally 2-3 times a day. Clinical experience with Mar-Tranexamic acid in menorrhagic (hypermenorrhea) children under 18 years of age is not available.
- Patients with Impaired Renal Function: In patients with serum creatine concentrations of 120 to 250 $\mu\text{mol/L}$, the recommended dose is 15 mg/kg orally tranexamic acid twice daily. At serum creatine levels of 250 to 500 $\mu\text{mol/L}$ the dosage should be 15 mg/kg orally at 24 hourly intervals, and at serum creatine levels of 500 $\mu\text{mol/L}$ or more, the same dose should be given at intervals of 48 hours between doses.

4.5 Missed Dose

If you forget to take your tablets you should take your next dose as usual. Do not take extra tablets to make up for the missed dose.

5 OVERDOSAGE

There is no known case of overdosage of Mar-Tranexamic acid in humans. Symptoms may include nausea, diarrhoea, dizziness, headache, convulsions, vomiting orthostatic symptoms and hypotension. Treatment of overdosage would consist of initiating vomiting, institution of gastric lavage, charcoal therapy, and symptomatic treatment. Maintain adequate diuresis.

It has been seen that 37 g of tranexamic acid caused mild intoxication in a seventeen-year-old after gastric lavage.

For management of a suspected drug overdose, contact your regional poison control centre.

6 DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING

Table: Dosage Forms, Strengths and Composition

Route of Administration	Dosage Form / Strength/Composition	Non-medicinal Ingredients
Oral	Tablet / 500 mg / tranexamic acid	Cellulose microcrystalline, colloidal silica anhydrous, castor oil hydrogenated, low substituted hydroxypropyl cellulose (LH 11), magnesium stearate, pregelatinised starch, povidone, talc. The tablets are coated with colour hypromellose, macrogol, opadry white OY-IN-58910 contains propylen glycol, sodium lauryl sulphate and titanium dioxide.

Packaging

Tablets (Off-white to pale yellow, oval shaped film-coated tablets plain on both sides) in 10's tablets Alu-Alu blister pack and HDPE bottles of 100 tablets. Each tablet contains 500 mg Tranexamic acid.

7 WARNINGS AND PRECAUTIONS

General

The erroneous administration of tranexamic acid via intrathecal or epidural routes has been reported, resulting in serious adverse reactions including death.

Cardiovascular

Venous and arterial thrombosis or thromboembolism has been reported in patients treated tranexamic acid. Patients with a high risk for thrombosis (a previous thromboembolic event and a family history of thromboembolic disease) should use Mar-Tranexamic acid only if there is a strong medical indication and under strict medical supervision.

Patients with disseminated intravascular coagulation (DIC), who require treatment with Mar-Tranexamic acid, must be under the strict supervision of a physician experienced in treating this disorder.

Driving and Operating Machinery

Tranexamic acid may cause dizziness and therefore may influence the ability to drive or use machines.

Endocrine and Metabolism

Hormonal Contraceptives: Combination hormonal contraceptives are known to increase the risk of venous thromboembolism, as well as arterial thromboses such as stroke and myocardial infarction. Because Mar-Tranexamic acid is an antifibrinolytic, concomitant use of hormonal contraception and Mar-Tranexamic acid may further exacerbate this increased thrombotic risk. Women using hormonal contraception should use Mar-Tranexamic acid only if there is a strong medical need and the benefit of treatment will outweigh the potential increased risk of a thrombotic event. The risk for thromboembolic events may be increased in patients using hormonal contraceptives. If Mar-Tranexamic acid has to be used in these patients, advise them to use an effective alternative (non-hormonal) contraceptive method. (see [9 DRUG INTERACTIONS](#)).

The following patients should consult their doctor prior to initiating treatment with Mar-Tranexamic acid: obese and diabetic, with polycystic ovary syndrome or a history of endometrial cancer in a first-degree relative, women receiving unopposed oestrogen or tamoxifen.

Hematologic

Avoid concomitant use of Mar-Tranexamic acid with medical products that are prothrombotic because concomitant use can further increase the risk of thromboembolic adverse reactions associated with tranexamic acid.

Patients with irregular menstrual bleeding should not use Mar-Tranexamic acid until the cause of the irregularity has been established.

Patients should consult their doctor if menstrual bleeding is not reduced after three menstrual cycles. If menstrual bleeding is not adequately reduced by Mar-Tranexamic acid, an alternative treatment should be considered. Patients taking anticoagulants (see [4.2 Recommended Dose and Dosage Adjustment](#)).

Neurologic

Convulsions have been reported in association with tranexamic acid treatment.

Ophthalmologic

Visual disturbances including visual impairment, vision blurred, impaired color vision have been reported with tranexamic acid. For patients who are to be treated for several weeks with tranexamic acid, an ophthalmic check-up is advisable (sharpness of vision, colour vision, fundus, field of vision, etc.) if possible, before treatment is initiated and regularly during treatments.

Renal

Tranexamic acid therapy is not indicated in haematuria caused by diseases of the renal parenchyma. Intravascular precipitation of fibrin frequently occurs in these conditions and may aggravate the disease. In addition, in cases of massive renal hemorrhage of any cause, antifibrinolytic therapy carries the risk of clot retention in the renal pelvis.

Care should be taken in cases of renal insufficiency due to the risk of accumulation, and where there is pronounced haematuria from the upper urinary tract, since in isolated cases obstacles to passage have been observed in the tract (see [4.2 Recommended Dose and Dosage Adjustment](#)).

Reproductive Health: Female and Male Potential

• Fertility

There are limited clinical data regarding the impact of tranexamic acid on fertility. After both oral and intravenous administration, tranexamic acid passes into the semen and inhibits its fibrinolytic activity, but without affecting the motility of the spermatozoa.

Sensitivity/Resistance

Cases of allergic reaction with use of intravenous tranexamic acid, including anaphylaxis or anaphylactoid reaction have been reported that are suggestive of a causal relationship. Patients should be closely monitored for the possibility of a severe allergic reaction occurring following its administration.

7.1 Special Populations

7.1.1 Pregnant Women

Tranexamic acid passes through the placenta. The concentration in cord blood after an intravenous

injection of 10 mg/kg to pregnant women is about 30 mg/L, as high as in the maternal blood. Fibrinolytic activity is very high in neonates. It is not known for certain whether a reduction of this activity during the first hours of life is harmful. Kullander and Nilsson who have wide experience with tranexamic acid in connection with childbirth have observed no negative effect on the infants.

For decisions regarding the use of tranexamic acid during pregnancy, the potential risk of tranexamic acid administration on the fetus should always be considered along with the mother's clinical need for tranexamic acid; an accurate risk-benefit evaluation should drive the treating physician's decision.

Available data from published studies, case series and case reports with tranexamic acid use in pregnant women in the second and third trimester and at the time of delivery have not clarified whether there is a drug-associated risk of miscarriage or adverse maternal or fetal outcomes. There are cases of fetal structural abnormalities that resulted in death of the newborn following administration of tranexamic acid to the mother during conception or the first trimester of pregnancy; however, due to other confounding factors the actual risk of major birth defects with use of tranexamic acid during pregnancy is not clear.

There were 13 clinical studies that described fetal and/or neonatal functional issues such as low Apgar score, neonatal sepsis, cephalohematoma and 9 clinical studies that discussed alterations to growth including low birth weight and preterm birth at 22-36 weeks of gestation in fetuses and infants exposed to tranexamic acid in utero.

A woman with fibrinolytic bleeding in the fourth month of pregnancy was treated with tranexamic acid for a total of 64 days. The total dose was 256 g. The delivery occurred spontaneously in the 30th week of pregnancy and was normal in all other respects. The infant was healthy.

In a case of threatened placental abruption that was prevented by giving tranexamic acid, the patient had already lost two children in connection with placental abruption. In the 26th week of her third pregnancy bleeding occurred, indicating abruption. Pathological proteolysis with predominant activation of the fibrinolytic system was established. Between the 26th and 33rd week of pregnancy about 250 g of tranexamic acid were given, both intravenously and orally. The bleeding was arrested, and a healthy child was delivered by Caesarean section.

The estimated background risk for major birth defects and miscarriage for the indicated human population is unknown. All pregnancies have a background risk of birth defect, loss, or other adverse outcomes.

7.1.2 Breast-feeding

Tranexamic acid is secreted in the mother's milk at a concentration of only a hundredth of the corresponding serum levels.

Published literature reports the presence of tranexamic acid in human milk. There are no data on the effects of tranexamic acid on the breastfed child or the effects on milk production. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for tranexamic acid and any potential adverse effects on the breastfed child from tranexamic acid or from the underlying maternal condition.

7.1.3 Pediatrics

Based on the data submitted and reviewed by Health Canada, the safety and efficacy of Mar-Tranexamic acid in pediatric patients has been established for use in hereditary angioneurotic oedema and increased local fibrinolysis when the diagnosis is indicative of hyperfibrinolysis. Specific data is available for surgical

patients undergoing cardiac and orthopedic surgeries. Therefore, Health Canada has authorized Mar-Tranexamic acid in these indications for pediatric use.

For menorrhagia (hypermenorrhea), limited data are available to Health Canada. Clinical experience with Mar-Tranexamic acid in menorrhagic (hypermenorrhea) children under 18 years of age is not available. Therefore, Health Canada has not authorized Mar-Tranexamic acid for this indication for pediatric use. See [1.1 Pediatrics](#).

7.1.4 Geriatrics

Clinical studies of tranexamic acid did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy. See [1.2 Geriatrics](#).

8 ADVERSE REACTIONS

8.1 Adverse Reaction Overview

Gastrointestinal Disorders: Gastrointestinal symptoms (nausea, vomiting, diarrhea) occur but disappear when the dose is reduced.

Immune System Disorders: allergic dermatitis has been reported less commonly.

Nervous System Disorders: Isolated cases of dizziness or reduced blood pressure have been reported

8.2 Clinical Trial Adverse Reactions

Clinical trials are conducted under very specific conditions. The adverse reaction rates observed in the clinical trials; therefore, may not reflect the rates observed in practice and should not be compared to the rates in the clinical trials of another drug. Adverse reaction information from clinical trials may be useful in identifying and approximating rates of adverse drug reactions in real-world use.

Eye Disorders: No retinal changes have been reported or observed at ophthalmic check-ups of patients treated with tranexamic acid for several weeks or months. This is despite experimental findings in animals (dog and cat) where retina changes have been observed after long-term administration of large doses of tranexamic acid.

8.2.1 Clinical Trial Adverse Reactions – Pediatrics

Additional data is not available for the pediatric population that is any different from the adult population (see section 8.1).

8.3 Less Common Clinical Trial Adverse Reactions

See section 8.1.

8.3.1 Less Common Clinical Trial Adverse Reactions – Pediatrics

Additional data is not available for the pediatric population that is any different from the adult population (see section 8.1).

8.4 Abnormal Laboratory Findings: Hematologic, Clinical Chemistry and Other Quantitative Data

No data is available regarding abnormal laboratory findings and tranexamic acid therapy.

8.5 Post-Market Adverse Reactions

Rare cases of adverse events have been reported with the use of tranexamic acid.

Eye Disorders: impaired vision, blurred vision or colour vision impairment (chromatopsia)

Immune System Disorders: Cases of allergic reaction with use of intravenous tranexamic acid, including anaphylaxis or anaphylactoid reaction have been reported that are suggestive of a causal relationship.

Nervous System Disorders: dizziness and seizures.

Vascular Disorders: thromboembolic events (acute myocardial infarction, thrombosis, arterial thrombosis limb, carotid artery thrombosis, cerebral infarction, cerebrovascular accident, deep vein thrombosis, pulmonary embolism, cerebral thrombosis, acute renal cortical necrosis, and central retinal artery and vein obstruction). Hypotension may occur after fast injection.

9 DRUG INTERACTIONS

9.2 Drug Interactions Overview

No studies of interactions between Mar-Tranexamic acid and other drugs have been conducted. Because of the absence of interaction studies, simultaneous treatment with anticoagulants must take place under the strict supervision of a physician experienced in this field.

9.4 Drug-Drug Interactions

Because Mar-Tranexamic acid is an antifibrinolytic, avoid concomitant use of Mar-Tranexamic acid with medical products that are prothrombotic because concomitant use can further increase the risk of thromboembolic adverse reactions associated with tranexamic acid.

Potential drug-drug interactions may lead to myocardial infarction after co-administration with hormonal contraceptives, hydrochlorothiazide, desmopressin, sulbactam-ampicillin, carbazochrome, ranitidine, or nitroglycerin. Concomitant use of hormonal contraception and Mar-Tranexamic acid may further exacerbate the increased thrombotic risk associated with combination hormonal contraceptives (see [7 WARNINGS AND PRECAUTIONS](#)).

9.5 Drug-Food Interactions

Interactions with food have not been established.

9.6 Drug-Herb Interactions

Interactions with herbal products have not been established.

9.7 Drug-Laboratory Test Interactions

Interactions with laboratory tests have not been established.

10 CLINICAL PHARMACOLOGY

10.1 Mechanism of Action

Mar-Tranexamic acid (tranexamic acid) produces an antifibrinolytic effect by competitively inhibiting the activation of plasminogen to plasmin. It is also a weak non-competitive inhibitor of plasmin. These properties make possible its clinical use as an antifibrinolytic in the treatment of both general and local fibrinolytic hemorrhages. It has an action mechanism similar to, but about 10 times more potent *in vitro*, than that of E amino caproic acid (EACA).

Tranexamic acid binds considerably more strongly than EACA to both the strong and weak sites in the plasminogen molecule in a ratio corresponding to the difference in potency between the compounds. The pharmacological significance of the binding to these different sites has not yet been evaluated. The therapeutic plasma concentration of tranexamic acid is 5-15 mg/L. The functional interaction between plasminogen and tissue activator, located mainly on fibrin, is prevented by dissociation of the complex between fibrin and specific substrate binding sites on plasminogen. A potentiating effect on natural inhibitors also appears to contribute to the clinical effect during antifibrinolytic therapy.

10.2 Pharmacodynamics

When administered 36-48 hours before surgery in four doses of 10-20 mg per kg body weight, an antifibrinolytically active concentration (10 µg/mL) of tranexamic acid remained up to 17 hours in the tissues investigated, and up to 7-8 hours in the serum.

Tranexamic acid (5×10^{-2} M) competitively inhibits the activation of trypsinogen by enterokinase and non-competitively inhibits the proteolytic activity of trypsin at 4-fold greater concentration. While aminocaproic acid moderately inhibits trypsin (40%), urinary kallikrein (30%) and pancreatic kallikrein (60%), Tranexamic acid has little effect (less than 10%) on any of these enzymes.

A still weaker effect is exerted on thrombin (7×10^{-3} M, 100 mg/L). Tranexamic acid (7×10^{-2} M) added to blood has no influence on the platelet count, coagulation time, one-stage prothrombin time or recalcification time. The plasma levels of AHF, Factor IX, prothrombin, Factor VII, Factor V and fibrinogen also remain unchanged *in vitro*.

Tranexamic acid (7×10^{-3} M, 1 g/L) does not aggregate human platelets *in vitro*. On the contrary *in vivo* (dogs) a dose of 30 mg/kg I.V. showed a decreased ADP-induced aggregability and a stabilizing effect on glass bead adhesiveness for 24 hours after the administration.

The activity of chymotrypsin is not impaired by synthetic antifibrinolytics and an inhibition of the action of pepsin is observed only in high concentrations, 6×10^{-3} M. The degradation of bradykinin in human plasma is not significantly inhibited at 10^{-2} M.

Tranexamic acid administered by I.V. infusion in the anaesthetized cat in doses of 0.4-2 mg/kg/min for 60 minutes and i.m. in the rabbit, cat and dog in doses of 170 mg/kg do not cause significant changes in arterial blood pressure, respiration or ECG.

The mechanism of the cardiovascular effect of Tranexamic acid is less clear than that of E-amino caproic acid, which appears to produce an indirect sympathomimetic effect. In relation to its therapeutic effect Tranexamic acid has about 10 times less potent effect than EACA on blood pressure. Threshold doses to produce increase in the blood pressure and heart rate are 50-100 mg/kg for Tranexamic acid and 30-50 mg/kg for EACA in anaesthetized cats, corresponding to a human equivalent dose of 160-320 mg/kg for tranexamic acid and 96-160 mg/kg for EACA.

10.3 Pharmacokinetics

Absorption

Absorption from the human gastrointestinal tract is not complete (40%). Three hours after a single oral dose of 25 mg per kg body weight, the peak serum level was 15.4 mg perL and the aqueous humour level was 1.6 mg per L.

Distribution

Tranexamic acid does not bind to serum albumin. The plasma protein binding seems to be fully accounted for by its binding to plasminogen and appears to be negligible at therapeutic plasma levels of 5-10 mg/L. Intravenous administration of 10 mg per kg body weight gave plasma concentrations of 18.3 µg, 9.6 µg and 5 µg per mL one, three and five hours after the injection. The ability of tranexamic acid to cross the blood brain barrier has been demonstrated when administered to patients with ruptured intracranial aneurysms. Tranexamic acid diffuses rapidly to the joint fluid and to the synovial membrane. In the joint fluid the same concentration was obtained as in the serum. The biological half-life in the joint fluid was about 3 hours.

Metabolism

Possible routes of biotransformation are acetylation or deamination followed by oxidation or reduction.

Elimination

Tranexamic acid is eliminated by glomerular filtration, excretion being about 30% at one hour, 55% at three hours and 90% at 24 hours after intravenous administration of 10 mg per kg body weight. After oral administration of 10-15 mg per kg body weight, excretion was 1% at one hour, 7% at three hours and 39% at 24 hours. After oral administration approximately 50% of the parent compound, 2% of the deaminated dicarboxylic acid, and 0.5% of the acetylated product are excreted.

Special Populations and Conditions

- **Pediatrics**
Clinical experience with tranexamic acid in menorrhagic children under 18 years of age is not available.
- **Pregnancy and Breast-feeding**
Tranexamic acid crosses the placenta. After an intravenous injection of 10 mg per kg the concentration can rise to about 30 µg per mL of fetal serum. Tranexamic acid also passes over into the breast milk during lactation in concentrations 1/100 of the corresponding serum levels.
- **Renal Insufficiency**
See [4.2 Recommended Dose and Dosage Adjustment](#).

11 STORAGE, STABILITY AND DISPOSAL

Store at room temperature (15°C - 30°C). Keep your medicine out of the reach and sight of children.

12 SPECIAL HANDLING INSTRUCTIONS

None

PART II: SCIENTIFIC INFORMATION

13 PHARMACEUTICAL INFORMATION

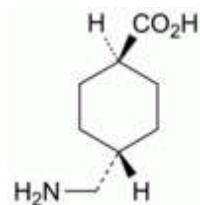
Drug Substance

Proper name: Tranexamic acid

Chemical name: trans-4 (aminomethyl) cyclohexanecarboxylic acid

Molecular formula and molecular mass: $C_8H_{15}NO_2$ and 157.2 g/mol

Structural formula:



Physicochemical properties: White or almost white, crystalline powder

Product Characteristics:

Solubility: Freely soluble in water and in glacial acetic acid, practically insoluble in acetone and in ethanol (96 per cent).

14 CLINICAL TRIALS

14.1 Clinical Trials by Indication

- The data is not available.

14.3 Comparative Bioavailability Studies

A randomized, open-label, two-treatment, two-period, two-sequence, single-dose (1 x 500 mg) cross over bioequivalence study of MAR-TRANEXAMIC ACID (Tranexamic Acid) Tablets, 500 mg (Marcan Pharmaceuticals Inc., Canada) and CYKLOKAPRON® (Tranexamic Acid) Film-Coated Tablets, 500 mg (Meda Pharmaceuticals Ltd., United Kingdom) was conducted in 36 healthy, adult, Indian Asian subjects (6 females and 30 males) under fasting conditions. All 36 subjects completed the study. The bioavailability data and results of the study are summarized in the following table.

Tranexamic Acid (1 x 500 mg) From measured data Geometric Mean Arithmetic Mean (CV%)				
Parameter	Test*	Reference†	% Ratio of Geometric Means	90% Confidence Interval
AUC _T (µg*h/mL)	47.04 48.15 (21.14)	46.61 48.16 (24.98)	100.92	96.50-105.54
AUC _I (µg*h/mL)	48.64 49.75 (20.92)	48.15 49.70 (24.74)	101.02	96.81-105.41
C _{max} (µg/mL)	7.82 8.03 (22.43)	7.56 7.86 (27.45)	103.41	98.22-108.88
T _{max} § (h)	2.33 (1.50 - 4.00)	2.33 (1.50 - 4.00)		
T _½ € (h)	5.59 (22.38)	5.42 (22.75)		

* MAR-TRANEXAMIC ACID (Tranexamic Acid) Tablets, 500 mg (Marcan Pharmaceuticals Inc., Canada)

† CYKLOKAPRON® (Tranexamic Acid) Film-Coated Tablets, 500 mg (Meda Pharmaceuticals Ltd.) were purchased from the United Kingdom

§ Expressed as the median (range) only

€ Expressed as the arithmetic mean (CV%) only

14.4 Immunogenicity

- The data is not available.

14.5 Clinical Trials – Reference Biologic Drug

- The data is not available.

15 MICROBIOLOGY

No microbiological information is required for this drug product.

16 NON-CLINICAL TOXICOLOGY

General Toxicology:

Nonclinical studies have shown a retinal toxicity associated with tranexamic acid. Toxicity is characterized by retinal atrophy commencing with changes to the retinal pigmented epithelium and progressing to retinal detachment in cats. The toxicity appears to be dose related, and changes are partially reversible at lower doses. Effects (some fully reversible) are seen in cats at clinically relevant doses. In the dog, effects were only observed at extremely high dose levels of 2 x 400 mg/kg/day and peak plasma levels of about 200 mg per litre. By comparison, in humans peak plasma levels are in the range of 10-20 mg per litre after a therapeutic oral dose of about 30 mg/kg body weight.

Studies suggest that the underlying mechanism for retinal toxicity may be related to a transient retinal ischemia at higher dose exposures, linked to the known sympathomimetic effect of high plasma levels of tranexamic acid. The clinical relevance of these findings is unknown.

In subacute toxicity studies, daily doses of Tranexamic acid administered orally to rats (1 to 5 g/kg for 10 weeks) and dogs (100 to 500 mg/kg for 4 months) and intra-peritoneally to rats (0 to 1000 mg/kg for 2 weeks) resulted in dose-related emesis, loose stools or diarrhea, and decreased body weight gain. Intravenous administration of tranexamic acid to rabbits (60 to 180 mg/kg for 13 days) resulted in dose-related tachypnea. In the 1-month intravenous study in dogs given 20, 100 or 500 mg/kg/day emesis and salivation occurred at the two highest dose levels. Microscopically, pulmonary thromboembolism was found in one dog receiving the intermediate dose and one from the high dose group. The latter dog also had two thrombophlebitis in the urinary bladder. No cardiac hemorrhages were found. Epileptogenic activity has been observed in animals with intrathecal use of tranexamic acid. No other significant observations have been made in general toxicology studies.

Carcinogenicity:

In one of the carcinogenicity studies in which rats were given tranexamic acid in high doses, biliary hyperplasia, cholangioma and adenocarcinoma of the liver were found. These findings have not been reproduced in a number of subsequent carcinogenicity studies. An increased incidence of leukemia (although not statistically significant) occurred in one study in mice given 4.8 percent Tranexamic acid for 20 months. In other studies, the frequency and histologic appearance of the observed tumors were similar in the test groups and in the untreated animals.

Reproductive and Development Toxicology:

In reproductive toxicity studies, tranexamic acid had no adverse effect on reproductive parameters of mice, rats and rabbits at clinically relevant doses.

17 SUPPORTING PRODUCT MONOGRAPHS

1. PrCYKLOKAPRON® (Tablets, 500 mg and 100 mg/mL solution for Intravenous Injection), Submission Control 254356, Product Monograph, Pfizer Canada ULC., Date of preparation: November 25, 2021.

PATIENT MEDICATION INFORMATION

READ THIS FOR SAFE AND EFFECTIVE USE OF YOUR MEDICINE

PrMAR-TRANEXAMIC ACID

Tranexamic Acid Tablets

Read this carefully before you start taking **Mar-Tranexamic acid** and each time you get a refill. This leaflet is a summary and will not tell you everything about this drug. Talk to your healthcare professional about your medical condition and treatment and ask if there is any new information about **Mar-Tranexamic acid**.

What is Mar-Tranexamic acid used for?

Mar-Tranexamic acid is used in adults and children:

- to treat a genetic disorder known as hereditary angioneurotic edema. This disorder is characterized by severe swelling of tissue under the skin; and
- to prevent or reduce bleeding from cervical cone surgery, tooth extraction, nosebleeds, and bleeding inside the eye.

Mar-Tranexamic acid can also be used to prevent or reduce bleeding in adults with heavy menstrual periods.

How does Mar-Tranexamic acid work?

Mar-Tranexamic acid belongs to a group of medicines called antifibrinolytic agents. It works by blocking the breakdown of blood clots, which helps to prevent or reduce bleeding.

What are the ingredients in Mar-Tranexamic acid?

Medicinal ingredient: Tranexamic acid.

Non-medicinal ingredients:

Cellulose microcrystalline, colloidal silica anhydrous, castor oil hydrogenated, low substituted hydroxypropyl cellulose (LH 11), magnesium stearate, pregelatinised starch, povidone, talc. The tablets are coated with colour hypromellose, macrogol, opadry white OY-IN-58910 contains propylene glycol, sodium lauryl sulphate and titanium dioxide.

Mar-Tranexamic acid comes in the following dosage forms:

Tablet: 500 mg of tranexamic acid.

Do not use Mar-Tranexamic acid if:

- you have a history or are at a higher risk for thrombosis (blood clots in the veins or arteries). This includes diseases where a blood clot breaks loose and blocks another blood vessel (e.g., deep vein thrombosis, pulmonary embolism, and cerebral thrombosis).
- you are allergic to tranexamic acid or to any other ingredients in Mar-Tranexamic acid.
- you have a colour vision problem that is not genetic.
- you have blood in the urine.
- you have bleeding in the space between your brain and the surrounding membrane (subarachnoid haemorrhage).

To help avoid side effects and ensure proper use, talk to your healthcare professional before you take Mar-Tranexamic acid. Talk about any health conditions or problems you may have, including if you:

- have kidney problems.

- have irregular menstrual bleeding where the cause is not known.
- are pregnant or plan to become pregnant.
- are breastfeeding or plan to breastfeed. Mar-Tranexamic acid can pass into breast milk and affect your unborn baby.
- are taking any of the following:
 - anticoagulants (used to prevent blood clots and thin the blood);
 - hormonal birth control methods (e.g., “the pill”); or
 - tamoxifen (used to treat breast cancer).
- have a condition known as disseminated intravascular coagulation (DIC; excessive blood clotting). Mar-Tranexamic acid will only be given if your healthcare professional has done blood tests to check that you are suitable, otherwise other anti-clotting medicines may be a better option for you.
- are obese.
- have diabetes.
- have polycystic ovary syndrome (a condition that produces high levels of a male hormone called androgen causing irregular or no periods).
- have a history of cancer of the uterine (endometrial cancer) in a close relative.
- are on estrogen therapy.
- are over the age of 65 years old.
- are at a higher risk for blood clots in the veins or arteries (e.g., a history of blood clots or a family history of blood clotting conditions).

Other warnings you should know about:

Taking Mar-Tranexamic acid can cause the following:

- **Allergic reaction:** This can occur when tranexamic acid solution for injection is given intravenously (directly into your bloodstream). Your healthcare professional will closely monitor you after tranexamic acid administration.
- **Seizures** (fits)
- **Thromboembolism** (blood clot in a vein or artery)
- **Vision problems:** This can include blurred vision, loss of vision, and impaired colour vision. If you are prescribed to take Mar-Tranexamic acid for several weeks, you should get an eye check-up before you start taking Mar-Tranexamic acid and at regular intervals. These check-ups will assess the sharpness of your vision, colour vision, and field of vision. If you notice any change in your vision, especially in your colour vision, tell your healthcare professional right away.

See the **Serious side effects and what to do about them** table, below, for more information on these and other serious side effects.

Pregnancy:

- Mar-Tranexamic acid can pass through the placenta and harm your unborn baby. If you are able to get pregnant, plan to become pregnant, are pregnant, or are taking hormonal birth control methods, there are specific risks that you must first discuss with your healthcare professional.
- Mar-Tranexamic acid can affect hormonal birth control methods such as “the pill” and can cause unwanted serious effects. Therefore, you should use a non-hormonal birth control method while you are taking Mar-Tranexamic acid. If you have any questions about this,

talk to your healthcare professional.

- If you become pregnant or think you are pregnant while taking Mar-Tranexamic acid, tell your healthcare professional right away.

Driving and using machines:

Mar-Tranexamic acid can cause dizziness. Before you drive or do tasks that require special attention, wait until you know how you respond to Mar-Tranexamic acid.

Menstrual Periods:

- If you are taking Mar-Tranexamic acid for heavy periods, you should monitor your menstrual flow. If menstrual bleeding is not reduced after three menstrual cycles, consult with your healthcare professional. They may recommend an alternative treatment.
- Mar-Tranexamic acid should not be used in children (under 18 years of age) to prevent or reduce bleeding during heavy menstrual periods.

Tell your healthcare professional about all the medicines you take, including any drugs, vitamins, minerals, natural supplements or alternative medicines.

The following may interact with Mar-Tranexamic acid:

- medicines used to help your blood clot;
- hormonal birth control (e.g., “the pill”);
- anticoagulants used to prevent blood clots and thin the blood;
- hydrochlorothiazide, a diuretic that is typically used to treat high blood pressure;
- desmopressin, a medicine used to treat diabetes;
- sulbactam-ampicillin, an antibiotic used to treat bacterial infections;
- carbazochrome, a medicine used to help your blood clot;
- ranitidine, a medicine used to lower the amount of stomach acid;
- nitroglycerin, a medicine used to treat or prevent chest pain.

How to take Mar-Tranexamic acid:

Take Mar-Tranexamic acid tablets by mouth exactly as directed by your healthcare professional. Always take the number of tablets your healthcare professional tells you.

Usual dose:

The usual adult dose is 2 to 3 tablets (1000 mg to 1500 mg) two to three times a day. The dose for children will be calculated by the healthcare professional based on their body weight.

Overdose:

Symptoms of an overdose with Mar-Tranexamic acid include:

- diarrhea;
- dizziness;
- headache;
- nausea;
- seizures;
- symptoms of low blood pressure (e.g., blurry vision, confusion, fainting, light-headedness, weakness); and
- vomiting.

If you think you, or a person you are caring for, have taken too much Mar-Tranexamic acid, contact a healthcare professional, hospital emergency department, or regional poison control centre immediately, even if there are no symptoms.

Missed Dose:

If you forget or miss a dose of Mar-Tranexamic acid tablets, do not take the missed dose. Instead, take the next scheduled dose at the usual time. Do not try to make up for the missed dose by taking extra tablets.

What are possible side effects from using Mar-Tranexamic acid?

These are not all the possible side effects you may have when taking Mar-Tranexamic acid. If you experience any side effects not listed here, tell your healthcare professional.

Side effects of Mar-Tranexamic acid may include:

- diarrhea;
- dizziness, especially if the injection is given too quickly;
- nausea (feeling sick);
- vomiting.

Serious side effects and what to do about them			
Symptom / effect	Talk to your healthcare professional		Stop taking drug and get immediate medical help
	Only if severe	In all cases	
RARE			
Allergic reaction: difficulty swallowing or breathing, wheezing, drop in blood pressure, feeling sick to your stomach, vomiting, hives, rash, or swelling of the face, lips, tongue or throat.			√
Eye problems: blurred vision, changes to the sharpness of vision, loss of vision, or colour vision change, changes to the field of vision, or sudden loss of eyesight in one eye.			√
Seizures (fit): loss of consciousness with uncontrollable shaking.			√

Serious side effects and what to do about them			
Symptom / effect	Talk to your healthcare professional		Stop taking drug and get immediate medical help
	Only if severe	In all cases	
Myocardial infarction (heart attack): pressure or squeezing pain between the shoulder blades, in the chest, jaw, left arm or upper abdomen, shortness of breath, dizziness, fatigue, light-headedness, clammy skin, sweating, indigestion, anxiety, feeling faint, or possible irregular heartbeat.			√
Thromboembolism (blood clot in a vein or artery, including in the brain, limbs, and heart): arm or leg pain, tenderness or swelling, skin that is red or warm, coldness, tingling, numbness, pale skin, muscle pain, muscle spasms, weakness, dizziness, numbness, weakness on one side of the body, and problems with talking, writing, or understanding language.			√
Stroke (bleeding or blood clot in the brain): sudden numbness, weakness or tingling of the face, arm, or leg, particularly on one side of the body, sudden headache, blurry vision, difficulty swallowing, difficulty speaking, lethargy, dizziness, fainting, vomiting, trouble understanding, trouble with walking, or loss of balance.			√

<p>Acute renal cortical necrosis (death of the tissue in the outer part of the kidney): red or dark brown urine, blood in urine, lower back pain, fever, changes in blood pressure, or urine flow is reduced or stopped.</p>			√
<p>Hypotension (low blood pressure): dizziness, fainting, light-headedness, blurred vision, nausea, vomiting, or fatigue (may occur when you go from lying or sitting to standing up and after fast injection).</p>		√	

If you have a troublesome symptom or side effect that is not listed here or becomes bad enough to interfere with your daily activities, tell your healthcare professional.

Reporting Side Effects

You can report any suspected side effects associated with the use of health products to Health Canada by:

- Visiting the Web page on Adverse Reaction Reporting (<https://www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada/adverse-reaction-reporting.html>) for information on how to report online, by mail or by fax; or
- Calling toll-free at 1-866-234-2345.

NOTE: Contact your healthcare professional if you need information about how to manage your side effects. The Canada Vigilance Program does not provide medical advice.

Storage:

Store at room temperature (15°C to 30°C).
Keep out of reach and sight of children.

If you want more information about Mar-Tranexamic acid:

- Talk to your healthcare professional.
- Find the full Product Monograph that is prepared for healthcare professionals and includes this Patient Medication Information by visiting the Health Canada website (<https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/drug-product-database.html>); the manufacturer's website (www.marcanpharma.com), or by calling 1-855-627-2261.

This leaflet was prepared by Marcan Pharmaceuticals Inc.

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