

## 1. NAME OF THE MEDICINAL PRODUCT

EVICEL Fibrin Sealant (Human)

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

The active ingredients are as follows:

	1 ml vial	2 ml vial	5 ml vial
<b>Component 1</b> Human clottable protein containing mainly fibrinogen and fibronectin *	50 – 90 mg	100 – 180 mg	250 – 450 mg
<b>Component 2</b> Human thrombin	800 – 1,200 IU	1,600 – 2,400 IU	4,000 – 6,000 IU

\* Total quantity of protein is 80 - 120 mg/ml.

For a full list of excipients see section 6.1.

## 3. PHARMACEUTICAL FORM

Solutions for sealant.

Clear or slightly opalescent solutions.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

EVICEL is indicated in adults as supportive treatment in surgery where standard surgical techniques are insufficient, for improvement of haemostasis (see section 5.1).

EVICEL is also indicated in adults as suture support for haemostasis in vascular surgery.

### 4.2 Posology and method of administration

The use of EVICEL is restricted to experienced surgeons who have been trained in the use of EVICEL.

#### Posology

The volume of EVICEL to be applied and the frequency of application should always be oriented towards the underlying clinical needs of the patient.

The dose to be applied is governed by variables including, but not limited to, the type of surgical intervention, the size of the area and the mode of intended application, and the number of applications. Application of the product must be individualised by the treating physician. In controlled clinical trials in vascular surgery, the individual dosage used was up to 4 ml, whereas in retroperitoneal or intra-abdominal surgery the individual dosage used was up to 10 ml. However, for some procedures (e.g., liver traumata) larger volumes may be required.

The initial volume of the product to be applied at a chosen anatomic site or target surface area should be sufficient to entirely cover the intended application area. The application can be repeated, if necessary.

#### Method and route of administration

Evicel is for epilesional use.

For instructions on preparation of the medicinal product before administration, see section 6.6. The product should only be administered according to the instructions and with the devices recommended for this product (see section 6.6).

Prior to applying EVICEL the surface area of the wound needs to be dried by standard techniques (e.g., intermittent application of compresses, swabs, use of suction devices).

To avoid the risk of potentially life-threatening air or gas embolism, EVICEL should be sprayed using pressurised CO<sub>2</sub> gas only. For spray application see sections 4.4 and 6.6 for specific spray recommendations on the required pressure and distance from tissue per surgical procedure and length of application tip.

### **4.3 Contraindications**

EVICEL must not be applied intravascularly.

Hypersensitivity to the active substances or to any of the excipients listed in section 6.1.

Spray application of EVICEL should not be used in endoscopic procedures. For laparoscopy, see section 4.4.

### **4.4 Special warnings and precautions for use**

EVICEL is for epilesional use only. It must not be applied intravascularly.

Life-threatening thromboembolic complications may occur if the product is unintentionally applied intravascularly.

Life-threatening air or gas embolism has occurred with the use of spray devices employing a pressure regulator to administer EVICEL. This event appears to be related to the use of the spray device at higher than recommended pressures and/or in close proximity to the tissue surface.

EVICEL spray application should only be used if it is possible to accurately judge the spray distance, especially during laparoscopy. Spray distance from tissue and CO<sub>2</sub> pressure should be within the ranges recommended by the manufacturer (see table in section 6.6 for pressure and distance).

When spraying EVICEL, changes in blood pressure, pulse, oxygen saturation and end-tidal CO<sub>2</sub> should be monitored because of the possibility of occurrence of air or gas embolism.

When using accessory tips with this product, the instructions for use of the tips should be followed.

Before administration of EVICEL, care is to be taken that parts of the body outside the desired application area are sufficiently protected (covered) to prevent tissue adhesion at undesired sites.

EVICEL should be applied as a thin layer. Excessive clot thickness may negatively interfere with the product's efficacy and the wound healing process.

Adequate data are not available to support the use of this product in tissue gluing, neurosurgery, application through a flexible endoscope for treatment of bleeding or in gastrointestinal anastomoses.

As with any protein product, allergic-type hypersensitivity reactions are possible. Signs of hypersensitivity reactions include hives, generalised urticaria, tightness of the chest, wheezing, hypotension and anaphylaxis. If these symptoms occur, the administration should be discontinued immediately.

In case of shock, standard medical treatment for shock should be implemented.

Standard measures to prevent infections resulting from the use of medicinal products prepared from human blood or plasma include selection of donors, screening of individual donations and plasma pools for specific markers of infection and the inclusion of effective manufacturing steps for the inactivation/removal of viruses. Despite this, when medicinal products prepared from human blood or plasma are administered, the possibility of transmitting infectious agents cannot be totally excluded. This also applies to unknown or emerging viruses and other pathogens.

The measures taken are considered effective for enveloped viruses such as HIV, Hepatitis C Virus and Hepatitis B Virus and for the non-enveloped Hepatitis A Virus. The measures taken may be of limited value against non-enveloped viruses such as parvovirus B19. Parvovirus B19 infection may be serious for pregnant women (foetal infection) and for individuals with immunodeficiency or increased erythropoiesis (e.g., haemolytic anaemia).

It is strongly recommended that every time EVICEL is administered to a patient, the name and batch number of the product are recorded in order to maintain a link between the patient and the batch of the product.

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

No formal interaction studies have been performed.

Similar to comparable products or thrombin solutions, the product may be denatured after exposure to solutions containing alcohol, iodine or heavy metals (e.g. antiseptic solutions). Such substances should be removed to the greatest possible extent before applying the product.

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

The safety of fibrin sealants/haemostatics for use in human pregnancy or during breast-feeding has not been established in controlled clinical trials. Experimental animal studies are insufficient to assess the safety with respect to reproduction, development of the embryo or foetus, the course of gestation and peri- and post-natal development. Therefore, the product should be administered to pregnant and breast-feeding women only if clearly needed.

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

Not relevant.

#### **4.8 Undesirable effects**

##### **Summary of the safety profile**

Hypersensitivity or allergic reactions (which may include angioedema, burning and stinging at the application site, bronchospasm, chills, flushing, generalised urticaria, headache, hives, hypotension, lethargy, nausea, restlessness, tachycardia, tightness of the chest, tingling, vomiting, wheezing) may occur in rare cases in patients treated with fibrin sealants/haemostatics. In isolated cases, these reactions have progressed to severe anaphylaxis. Such reactions may especially be seen if the preparation is applied repeatedly, or administered to patients known to be hypersensitive to constituents of the product.

Antibodies against components of fibrin sealant/haemostatic products may occur rarely.

Inadvertent intravascular injection could lead to thromboembolic event and disseminated intravascular coagulation (DIC), and there is also a risk of anaphylactic reaction (see section 4.4).

Life-threatening air or gas embolism has occurred with the use of spray devices employing pressure regulator to administer EVICEL. This event appears to be related to the use of the spray device at higher than recommended pressures and/or in close proximity to the tissue surface.

For safety with respect to transmissible agents, see section 4.4.

#### Tabulated list of adverse reactions

The table presented below is according to the MedDRA system organ classification (SOC and Preferred Term Level). Frequencies have been evaluated according to the following convention: Very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); very rare ( $< 1/10,000$ ), not known (cannot be estimated from the available data).

MedDRA System Organ Class	Preferred Term	Frequency
<i>Adverse Reactions in Retroperitoneal or Intra-Abdominal Surgery studies</i>		
Infections and infestations	Abdominal abscess	Common
General disorders and administration site disorders	Pyrexia	Common
Blood and lymphatic system disorders	Coagulopathy	Common
<i>Adverse Reactions in Vascular Surgery Study</i>		
Infections and infestations	Graft infection, Staphylococcal infection	Uncommon
Vascular disorders	Haematoma	Uncommon
General disorders and administration site conditions	Oedema peripheral	Uncommon
Investigations	Decreased haemoglobin	Uncommon
Injury, poisoning and procedural complications	Incision site haemorrhage	Uncommon
	Vascular graft occlusion	Uncommon
	Wound	Uncommon
	Post-procedural haematoma	Uncommon
	Post-operative wound complication	Uncommon

#### Description of selected adverse reactions

##### Adverse Reaction Rates in Retroperitoneal or Intra-Abdominal Surgery Studies

Among 135 patients undergoing retroperitoneal and intra-abdominal surgery (67 patients treated with EVICEL and 68 controls), no adverse events were considered to be causally related to the study treatment according to the investigator assessments. However, 3 serious adverse events (SAE) (one abdominal abscess in the EVICEL group and one abdominal and one pelvic abscess in the control group) were considered by the Sponsor to be possibly related to study treatment.

In a study in a paediatric population involving 40 patients (20 patients treated with EVICEL and 20 controls), 2 adverse events (pyrexia and coagulopathy) were considered possibly related to EVICEL by the investigator.

##### Adverse Reactions - Vascular Surgery

In a controlled study involving 147 patients undergoing vascular grafting procedures (75 treated with EVICEL and 72 controls), a total of 16 subjects were reported to have had a graft thrombosis/occlusion adverse event during the study period. The events were evenly distributed across treatment arms, with 8 each in the EVICEL and the control groups.

A non-interventional post-authorisation safety study was conducted which involved 300 patients undergoing vascular surgery during which EVICEL was used. Safety monitoring focused on the specific adverse

reactions of graft patency, thrombotic events, and bleeding events. No adverse reactions were reported during the study.

#### **4.9 Overdose**

No case of overdose has been reported.

### **5. PHARMACOLOGICAL PROPERTIES**

#### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: local haemostatics, combinations, ATC code: B02BC30

##### Mechanism of action

The fibrin adhesion system initiates the last phase of physiological blood coagulation. Conversion of fibrinogen into fibrin occurs by the splitting of fibrinogen into fibrin monomers and fibrinopeptides. The fibrin monomers aggregate and form a fibrin clot. Factor XIIIa, which is activated from Factor XIII by thrombin, crosslinks fibrin. Calcium ions are required for both the conversion of fibrinogen and the crosslinking of fibrin. As wound healing progresses, increased fibrinolytic activity is induced by plasmin and decomposition of fibrin to fibrin degradation products is initiated.

##### Clinical efficacy and safety

Clinical studies demonstrating haemostasis and suture support were conducted in a total of 147 patients (75 with EVICEL, 72 with control) undergoing vascular surgery with PTFE grafts and in a total of 135 patients (66 with EVICEL, 69 with control) undergoing retroperitoneal and intra-abdominal surgery.

##### Paediatric population

Data are too limited to support the safety and effectiveness of EVICEL in children. Of 135 patients undergoing retroperitoneal and intra-abdominal surgery who were included in the controlled study of EVICEL, 4 patients treated with EVICEL were aged 16 years or younger. Of these, 2 were children aged 2 and 5 years and 2 were adolescents of 16 years

#### **5.2 Pharmacokinetic properties**

EVICEL is intended for epilesional use only. Intravascular administration is contraindicated. As a consequence, intravascular pharmacokinetic studies were not performed in man.

Studies have been conducted in rabbits to evaluate the absorption and elimination of thrombin when applied to the cut surface of the liver resulting from partial hepatectomy. Using  $^{125}\text{I}$ -thrombin it was shown that a slow absorption of biologically inactive peptides resulting from the breakdown of thrombin occurred, reaching a  $C_{\text{max}}$  in the plasma after 6-8 hours. At the  $C_{\text{max}}$ , the plasma concentration represented only 1-2 % of the applied dose.

Fibrin sealants/haemostatics are metabolised in the same way as endogenous fibrin, by fibrinolysis and phagocytosis.

#### **5.3 Preclinical safety data**

Studies performed in bacteria to determine mutagenicity were negative for Thrombin alone, Biological Active Component (containing fibrinogen, citrate, glycine, tranexamic acid, and arginine hydrochloride), TnBP alone, and Triton X-100 alone at all concentrations tested. All concentrations of the combination of TnBP and Triton X-100 also tested negative in assays performed to determine mammalian cell mutagenicity, chromosomal aberrations and micronuclei induction.

After local application, absorption of thrombin into the plasma is slow and consists principally of thrombin degradation products which are eliminated.

No toxicological effects due to the solvent detergent reagents (TnBP and Triton X-100) used in the virus inactivation procedure are expected since the residual levels are less than 5 µg/ml.

Neurotoxicity studies performed with EVICEL confirmed that subdural administration in the rabbit was not associated with any evidence of neurotoxicity. Neurobehavioral observations for 14±1 days showed no abnormal findings. No major macroscopic signs of local intolerance and no treatment-related macroscopic findings were observed. Analysis of cerebrospinal fluid did not reveal major signs of inflammation.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

<b>Human Fibrinogen vial</b>		
Arginine hydrochloride	Glycine	Sodium chloride
Calcium chloride	Water for injections	Sodium citrate

<b>Human Thrombin vial:</b>		
Calcium chloride	Human albumin	Mannitol
Water for injections	Sodium acetate	

Each ml contains 11.6-12.9 mg sodium.

### **6.2 Incompatibilities**

This medicinal product must not be mixed with other medicinal products.

### **6.3 Shelf life**

2 years.

Within the 2 years shelf life, after thawing, unopened vials can be stored at 2–8°C and protected from light, for up to 30 days. The vials can be stored at room temperature for up to 24 hours. By the end of this period the product has to be used or discarded.

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

Store in a freezer at or below -18°C. Do not re-freeze.

Keep the vials in the outer carton in order to protect from light.

The vials must be stored in an upright position.

For storage conditions after thawing of the medicinal product, see section 6.3. The new expiry date at 2°C-8°C should be noted on the carton but should not exceed the expiry date printed by the manufacturer on the carton and label. At the end of this period the product has to be used or discarded.

Once drawn up into the application device, the product must be used immediately.

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

EVICEL is supplied as a package containing two separate vials (glass type I) with rubber stoppers (type I), each containing 1 ml, 2 ml or 5 ml sterile solution of Human Fibrinogen and Human Thrombin, respectively.

An application device and appropriate accessory tips are supplied separately.

Not all pack sizes may be marketed.

## **6.6 Special precautions for disposal and other handling**

The solutions are clear or slightly opalescent. Solutions that are cloudy or have deposits should not be used.

### Thawing

The vials should be thawed in one of the following ways:

**2°C-8°C** (refrigerator): vials thaw within 1 day, or

**20°C-25°C** (room temperature): vials thaw within 1 hour, or

**37°C** (e.g., water bath, using aseptic technique, or by warming vials in the hand): vials should be thawed within 10 minutes and must not be left at this temperature for longer than 10 minutes or until fully thawed. The temperature must not exceed 37°C.

**Before use, the product must reach 20-30°C.**

### Device assembly

EVICEL should only be applied using the CE-marked EVICEL application device and optional use of accessory tips to the device. Leaflets giving detailed instructions for use of EVICEL in conjunction with the application device and optional accessory tips are provided with the package of the application device and of the accessory tips. The accessory tips should only be used by persons adequately trained in laparoscopic, laparoscopic-assisted or open surgical procedures.

Draw the contents of the two vials into the application device, following the instructions for use in the device package. Both syringes should be filled with equal volumes, and should not contain air bubbles. No needles are involved in the preparation of EVICEL for administration.

### Application by dripping

Keeping the tip of the applicator as close to the tissue surface as possible, but without touching the tissue during application, apply individual drops to the area to be treated. If the applicator tip becomes blocked, the catheter tip can be cut back in 0.5 cm increments.

### Spray application

To avoid the risk of potentially life-threatening air or gas embolism, EVICEL should only be sprayed using pressurised CO<sub>2</sub> (see table below).

The pressure regulator should be used in accordance with the manufacturer's instructions.

Connect the short tube on the application device to the male luer-lock end of the long gas tube. Connect the female luer-lock of the gas tube (with the 0.2 µm bacteriostatic filter) to a pressure regulator.

When applying EVICEL using a spray device, it has to be ensured that the pressure and the distance from the tissue are within the ranges recommended by the manufacturer of this product, as given in the following table:

<b>Surgery</b>	<b>Spray set to be used</b>	<b>Applicator tips to be used</b>	<b>Pressure regulator to be used</b>	<b>Recommended distance from target tissue</b>	<b>Recommended spray pressure</b>
Open surgery	EVICEL Applicator Device	6 cm Flexible Tip 35 cm Rigid	Omrix Pressure Regulator	10-15 cm (4 – 6 inches)	20 - 25 psi/ 1.4 – 1.7 bar

Laparoscopic procedures		Tip			
		45cm Flexible Tip			
		35 cm Rigid Tip			
		45cm Flexible Tip			
				4 – 10 cm (1.6 – 4 inches)	15 – 20 psi/ 1.0 – 1.4 bar
					20psi 1.4 bar

The product should then be sprayed onto the surface of the tissue in short bursts (0.1-0.2 ml) to form a thin, even layer. EVICEL forms a clear film over the area of application.

When spraying EVICEL, changes in blood pressure, pulse, oxygen saturation and end tidal CO<sub>2</sub> should be monitored because of the possibility of occurrence of gas embolism.

When using accessory tips with this product, the instructions for use of the tips should be followed.

#### Disposal

Any unused product or waste material should be disposed of in accordance with local requirements.

## **7. MANUFACTURER**

Omrix Biopharmaceuticals Ltd., Plasma Fractionation Institute  
MDA Blood Bank, Sheba Hospital, Ramat Gan  
POB 888, Kiryat Ono 5510801, Israel

## **8. PRODUCT REGISTRANT**

Johnson & Johnson Pte Ltd.  
2 Science Park Drive, #07-13, Ascent,  
Singapore Science Park 1  
Singapore 118222

Date of Revision: 17 Jan 2022