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## SUMMARY OF PRODUCT CHARACTERISTICS

### 1. NAME OF THE MEDICINAL PRODUCT

Lubion 25 mg solution for injection

### 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each vial (1.112 ml) contains 25 mg of progesterone (theoretical concentration 22.48 mg/ml).  
For a full list of excipients, see section 6.1.

### 3. PHARMACEUTICAL FORM

Solution for injection.  
Clear colourless solution.

### 4. CLINICAL PARTICULARS

#### 4.1 Therapeutic indications

Lubion is indicated in adults for luteal support as part of an Assisted Reproductive Technology (ART) treatment program in infertile women who are unable to use or tolerate vaginal preparations.

#### 4.2 Posology and method of administration

##### Posology

##### *Adults*

Once daily injection of 25 mg from day of oocyte retrieval, usually until 12 weeks of confirmed pregnancy.

As the indications for Lubion are restricted to women of child-bearing age, dosage recommendations for children and the elderly are not appropriate.

Lubion is given by subcutaneous (25 mg) or intramuscular (25 mg) injection.

##### Special populations

##### *Elderly*

No clinical data have been collected in patients over age 65.

##### *Renal and Hepatic impairment*

There is no experience with use of Lubion in patients with impaired liver or renal function.

##### *Paediatric population*

The safety and efficacy of Lubion in children (0 to 18 years) has not been established

There is no relevant use of Lubion in the paediatric population or elderly in the indication for luteal support as part of an Assisted Reproductive Technology (ART) treatment program in infertile women.

### **Method of administration**

Treatment with Lubion should be initiated under the supervision of a physician experienced in the treatment of fertility problems.

Lubion is intended for intramuscular or subcutaneous administration.

#### *Intramuscular administration*

Choose an appropriate area (femoral quadriceps of the right or left thigh). Swab proposed area, insert a deep injection (needle at an angle of 90°). The product should be injected slowly to minimise local tissue damage.

#### *Subcutaneous administration*

Choose an appropriate area (front of thigh, lower abdomen), swab proposed area, pinch the skin together firmly and insert the needle at an angle of 45° to 90°. The product should be injected slowly to minimise local tissue damage.

### **4.3 Contraindications**

Lubion should not be used in individuals with any of the following conditions:

- Hypersensitivity to progesterone or to any of the excipients
- Undiagnosed vaginal bleeding
- Known missed abortion or ectopic pregnancy
- Severe hepatic dysfunction or disease
- Known or suspected breast or genital tract cancer
- Active arterial or venous thromboembolism or severe thrombophlebitis, or a history of these events
- Porphyria
- A history of idiopathic jaundice, severe pruritus or pemphigoid gestationis during pregnancy.

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

Lubion should be discontinued if any of the following conditions are suspected: myocardial infarction, cerebrovascular disorders, arterial or venous thromboembolism, thrombophlebitis, or retinal thrombosis.

Caution is indicated in patients with mild to moderate hepatic dysfunction.

Patients with a history of depression need to be closely observed. Consider discontinuation if symptoms worsen.

Because progesterone may cause some degree of fluid retention, conditions that might be influenced by this factor (e.g. epilepsy, migraine, asthma, cardiac or renal dysfunction) require careful observation.

A decrease in insulin sensitivity and thereby in glucose tolerance has been observed in a small number of patients on oestrogen-progestogen combination drugs. The mechanism of this decrease is not known. For this reason, diabetic patients should be carefully observed while receiving progesterone therapy (see section 4.5).

Sex steroid use may also increase the risk of retinal vascular lesions. To prevent these latter complications, caution is to be taken in users >35 years, in smokers, and in those with risk factors for atherosclerosis. Use should be terminated in case of transient ischemic events, appearance of sudden severe headaches, or vision impairments related to papillary oedema or retinal haemorrhage.

Abrupt discontinuation of progesterone dosing may cause increased anxiety, moodiness, and increased sensibility to seizures.

Before starting treatment with Lubion, the patient and her partner should be assessed by a doctor for causes of infertility or pregnancy complications.

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

Drugs known to induce the hepatic cytochrome-P450-3A4 system (e.g. rifampicin, carbamazepine, griseofulvin, phenobarbital, phenytoin or St. John's Wort (*Hypericum perforatum*-containing herbal products) may increase the elimination rate and thereby decrease the bioavailability of progesterone.

In contrast ketoconazole and other inhibitors of cytochrome P450-3A4 may decrease elimination rate and thereby increase the bioavailability of progesterone.

Since progesterone can influence diabetic control an adjustment in antidiabetic dosage could be required (see section 4.4).

Progestogens may inhibit ciclosporin metabolism leading to increased plasma-ciclosporin concentrations and a risk of toxicity

The effect of concomitant injectable products on the exposure of progesterone from Lubion has not been assessed. Concomitant use with other drugs is not recommended.

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

##### **Fertility**

Lubion is used in the treatment of some forms of infertility (see section 4.1 for full details).

##### **Pregnancy**

Lubion is indicated for luteal support as part of an Assisted Reproductive Technology (ART) treatment program in infertile women.

There is limited and inconclusive data on the risk of congenital anomalies, including genital abnormalities in male or female infants, following intrauterine exposure during pregnancy. The rates of congenital anomalies, spontaneous abortion and ectopic pregnancies observed during the clinical trial were comparable with the event rate described in the general population although the total exposure is too low to allow conclusions to be drawn.

##### **Breastfeeding**

Progesterone is excreted in human milk and Lubion should not be used during breast-feeding.

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

Lubion has minor or moderate influence on the ability to drive and use machines. Progesterone may cause drowsiness and/or dizziness; therefore caution is advised in drivers and those operating machinery.

#### **4.8 Undesirable effects**

The most frequently reported adverse drug reactions during treatment with Lubion during clinical trial are administration site reactions, breast and vulvo-vaginal disorders.

The table below displays the main adverse drug reactions in women treated with Lubion in the pivotal clinical trial. Data is expressed by system organ class (SOC) and frequency.

<u>System Organ Class (SOC)</u>	<u>Very common (<math>\geq 1/10</math>)</u>	<u>Common (<math>\geq 1/100</math> to <math>&lt; 1/10</math>)</u>	<u>Uncommon (<math>\geq 1/1000</math> to <math>&lt; 1/100</math>)</u>
Psychiatric disorders			Mood altered
Nervous system disorders		Headache	Dizziness, Somnolence
Gastrointestinal disorders		Abdominal distension Abdominal pain Nausea Vomiting Constipation	Gastrointestinal disturbances
Skin and subcutaneous tissue disorders			Pruritus Rash
Reproductive system and breast disorders	Uterine spasm Vaginal haemorrhage	Breast tenderness Breast pain Vaginal discharge Vulvo-vaginal pruritus Vulvo-vaginal discomfort Vulvo-vaginal inflammation OHSS	Breast disorders
General disorders and administration site conditions	Administration site reactions*	Injection site haematoma Injection site induration Fatigue	Feeling hot, Malaise Pain

\*Administration site reactions, such as irritation, pain, pruritus and swelling.

### Class effects

The following disorders although not reported by patients in clinical studies using Lubion have been described with other drugs in this class of medicines.

<u>System Organ Class (SOC)</u>	
Psychiatric disorders	Depression
Nervous system disorders	Insomnia
Hepatobiliary disorders	Jaundice
Reproductive system and breast disorders	Menstrual disturbances Premenstrual like syndrome
Skin and subcutaneous tissue disorders	Urticaria, Acne, Hirsutism, Alopecia
General disorders and administration site conditions	Weight gain Anaphylactoid reactions

### **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

High doses of progesterone may cause drowsiness.

Treatment of overdose consists of discontinuation of Lubion together with initiation of appropriate symptomatic and supportive care.

### 5. PHARMACOLOGICAL PROPERTIES

#### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Sex hormones and modulators of the genital system; Progestogens; Pregnen-(4) derivatives, ATC code: G03DA04.

Progesterone is a naturally occurring steroid that is secreted by the ovary, placenta, and adrenal glands. In the presence of adequate estrogen, progesterone transforms a proliferative endometrium into a secretory endometrium. Progesterone is necessary to increase endometrial receptivity for implantation of an embryo. Once an embryo is implanted, progesterone acts to maintain the pregnancy.

#### Clinical efficacy and safety

Ongoing pregnancy rates following 10-week luteal support with Lubion 25 mg/day (N= 318) in patients who had an embryo transfer in the Phase III clinical trial were 29.25% (95% CI: 24.25 - 34.25).

#### Paediatric population

The European Medicine Agency has waived the obligation to submit the results of studies with Lubion in all subsets of the paediatric population in the granted indications

#### 5.2 Pharmacokinetic properties

##### Absorption

Progesterone serum concentrations increased following the subcutaneous (s.c.) administration of 25 mg of Lubion to 12 healthy post-menopausal females. By one hour post-administration of a single s.c. dose the mean C<sub>max</sub> was 50.7±16.3 ng/ml. The progesterone serum concentration decreased following a mono-exponential decay, and by twelve hours post-administration the average concentration was 6.6±1.6 ng/ml. The minimum serum concentration, 1.4±0.5 ng/ml, was reached at the 96-hour time-point. Pharmacokinetic analysis demonstrated linearity of the three s.c. doses tested (25 mg, 50 mg and 100 mg).

Following multiple dosing of 25 mg/daily via subcutaneous administration, steady state concentrations were attained within approximately 2 days of treatment with Lubion. Trough values of 4.8 ± 1.1 ng/mL were observed with AUCs of 346.9 ± 41.9 ng\*hr/mL on Day 11.

##### Distribution

In humans, 96-99% of progesterone is bound to serum proteins like albumin (50-54%) or transcortin (43-48%), and the remainder is free in the plasma. Owing to its lipid solubility, progesterone travels from the bloodstream to its target cells through passive diffusion.

### **Biotransformation**

Progesterone is metabolized primarily by the liver largely to pregnanediols and pregnanones. Pregnanediols and pregnanones are conjugated in the liver to glucuronide and sulfate metabolites. Progesterone metabolites that are excreted in the bile may be deconjugated and may be further metabolized in the gut via reduction, dehydroxylation, and epimerization.

### **Excretion**

Progesterone undergoes renal and biliary elimination.

## **5.3 Preclinical safety data**

Rabbits were treated with 6.7 mg/kg/day of Lubion for up to 7 consecutive days by s.c. and i.m. injection. No relevant effect attributed to the treatment with Lubion by the s.c. route was seen at local, macroscopic and histopathological examination.

At local examinations, animals dosed with the vehicle and progesterone by the i.m. route for 7 days had slight local reaction such as haematoma or red induration of the muscle. A higher incidence of oedema was observed in animals dosed with Lubion. These signs were correlated with a local tissue necrosis and macrophage response at histopathological examination. Moderate fibrosis was associated with intramuscular administration of Lubion after the seven day post-treatment observation period. However, none of the histological changes observed were marked or extensive.

A longer term study was performed with administration of Lubion at 1 mg/kg/day s.c. or at 4 mg/kg/day i.m. No toxicologically important clinical signs were recorded and the minor signs observed were generally similar to those receiving vehicle. Histopathological examination of the injection sites after 28 days of treatment identified minor changes these were generally similar to those animals receiving vehicle. After the post-treatment observation period (14 days) there were no changes associated with injection of Lubion.

Other preclinical studies have not revealed other effects than those which can be explained based on the known hormone profile of progesterone. However, it should be borne in mind that sex steroids such as progesterone can promote the growth of certain hormone-dependent tissues and tumours.

The active substance progesterone shows an environmental risk for the aquatic environment especially to fish.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Hydroxypropylbetadex,  
Water for injections

### **6.2 Incompatibilities**

This medicinal product must not be mixed with other medicinal products except those mentioned in section 6.6.

**6.3 Shelf life**

2years

The medicinal product must be used immediately after first opening; any remaining solution must be discarded.

**6.4 Special precautions for storage**

Store below 25°C. Do not refrigerate or freeze.

Store in the original package in order to protect from light.

**6.5 Nature and contents of container**

Colourless Type I glass vial fitted with a bromobutyl rubber stopper, and an aluminium seal and ‘flip-off’ cap. Each pack contains 1, 7 or 14 vials. Not all pack sizes may be marketed.

**6.6 Special precautions for disposal**

The solution is for single use only.

A medical specialist must perform all i.m. injections.

The solution should not be administered if it contains particles or is discoloured.

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

**7. MARKETING AUTHORISATION HOLDER**

IBSA Farmaceutici Italia Srl  
Via Martiri di Cefalonia 2  
26900 Lodi (Italy)

**8. MARKETING AUTHORISATION NUMBER(S)**

PL21039/0026

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

22/02/2013

**10. DATE OF REVISION OF THE TEXT**

03/2018