

## **SUMMARY OF PRODUCT CHARACTERISTICS**

### **1 NAME OF THE MEDICINAL PRODUCT**

Velariq 1 mg/ml, intravesical solution

### **2 QUALITATIVE AND QUANTITATIVE COMPOSITION**

1 ml solution contains 1 mg oxybutynin hydrochloride.

One scaled prefilled ready-to-use syringe with 10 ml solution contains 10 mg oxybutynin hydrochloride.

Excipient with known effect

Sodium 3.5 mg/ml

For the full list of excipients, see section 6.1.

### **3 PHARMACEUTICAL FORM**

Intravesical solution.

Clear, colourless solution with a pH of 3.8 to 4.5 and an osmolality of 280 – 300 mOsmol/kg.

### **4 CLINICAL PARTICULARS**

#### **4.1 Therapeutic indications**

Velariq is indicated for the suppression of neurogenic detrusor overactivity (NDO) in children from 6 years of age and adults, who are managing bladder emptying by clean intermittent catheterisation, not adequately managed with oral anticholinergics (see section 5.1).

#### **4.2 Posology and method of administration**

Posology

Initial dose adjustment shall be done by a neuro-urologist under close urodynamic control.

There are no fixed rules for the dose regimen as high interindividual differences in bladder pressure and doses required to improve neurogenic detrusor overactivity exist. The dose regimen (doses and timings) must therefore be determined individually according to the

patient's need.

Individual dosages will be applied to control uro-dynamic parameters sufficiently (maximum detrusor pressure < 40 cm H<sub>2</sub>O) aiming at complete inhibition of neurogenic detrusor overactivity.

In the course of intravesical oxybutynin therapy, urodynamic parameters shall be controlled in regular intervals as defined by the attending urologist.

*Paediatric population*

The safety and efficacy of oxybutynin hydrochloride in children aged 0 to 5 years of age have not yet been established.

*Dose recommendations in the following age groups*

The dose recommendations have been calculated according to the body weight percentiles of the different age groups (table 1)

*Table 1: Dose recommendations in all age groups*

Age group	Age [years]	Recommended daily starting dose [mg]	Recommended total daily dose [mg]
<b>Children</b>	6 - 12	2	2 - 30
<b>Adolescents</b>	12 - 18	10	10 - 40
<b>Adults</b>	19 - 65	10	10 - 40
<b>Elderly</b>	from 65	10	10 - 30

If higher doses than the starting dose are considered necessary, the dose should be increased using a step-wise approach until neurogenic detrusor overactivity is sufficiently controlled to allow close monitoring of both efficacy and safety. The required daily maintenance doses may be divided into several applications (table 2 and 3). Given a number of six clean intermittent catheterisations (CICs) per day, the following dose scheme is recommended:

*Table 2: Recommended dose scheme for 2 mg starting doses (children from 6 - 12 years)*

Daily dose [mg]	Administered dose per application [mg]					
	CIC 1	CIC 2	CIC 3	CIC 4	CIC 5	CIC 6
<b>2</b>	2	-	-	-	-	-
<b>5</b>	5	-	-	-	-	-
<b>10</b>	5	-	5	-	-	-
<b>15</b>	5	-	5	-	5	-
<b>20</b>	10	-	10	-	-	-
<b>30</b>	10	-	10	-	10	-

*Table 3: Recommended dose scheme for 10 mg starting doses (adolescents from 12 years and above, adults and elderly)*

Daily dose [mg]	Administered dose per application [mg]					
	CIC 1	CIC 2	CIC 3	CIC 4	CIC 5	CIC 6
<b>10</b>	5	-	5	-	-	-

<b>20</b>	10	-	10	-	-	-
<b>30</b>	10	-	10	-	10	-
<b>40</b>	10	10	10	-	10	-

*Elderly (from 65 years)*

As with other anticholinergic drugs caution should be observed in frail and elderly patients, especially if doses higher than 30 mg per day are considered as required (see section 4.4).

*Hepatic or renal impairment*

Velariq should be used with caution in patients with hepatic or renal impairment. The use of Velariq in those patients should be carefully monitored and dose reductions may be needed.

Method of administration

Intravesical use.

To ensure safe and effective treatment, patients must be familiar with the procedure of clean intermittent catheterisation (CIC). The patients and/or relative, carer shall be trained on CIC and the administration procedure by specialised health care professionals.

As soon as the environmental conditions are aseptic, a sterile disposable urethral catheter is inserted into the bladder. The bladder has to be drained completely before the instillation.

The scaled prefilled syringe is taken from the bag and the cap is removed from the syringe.

A stepped tapered luer-lock adapter is screwed on the tip of the syringe. With the help of the stepped tapered luer-lock adapter, the syringe is connected to the catheter. The required amount of the oxybutynin solution is instilled into the bladder by constant pressing on the plunger of the syringe.

If the application of less than 10 ml (one syringe content) is required, the solution that is not used remains in the syringe which has to be brought to a pharmacy for disposal later.

After the instillation the catheter is removed.

The instilled solution remains in the bladder until the next catheterisation.

Any unused medicinal product, the urethral catheter and the stepped tapered luer-lock adapter have to be discarded.

The duration of treatment depends on the symptoms, the underlying disease and / or the treatment goal and is determined by the treating physician.

### **4.3 Contraindications**

- Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.
- Severe gastro-intestinal condition (e. g. severe ulcerative colitis and toxic megacolon).
- Myasthenia gravis.
- Narrow angle glaucoma and in patients who are at risk for these conditions.
- Concomitant oxygen therapy.

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

If urinary tract infection is present, an appropriate antibacterial therapy should be started.

Velariq should be used with caution in elderly patients, who may be more sensitive to the effects of centrally acting anticholinergics.

Psychiatric and central nervous system (CNS) anticholinergic events like sleep disorders (e.g. insomnia) and cognitive disorders have been associated with oxybutynin use, especially in elderly patients. Caution should be exercised when oxybutynin is administered concomitantly with other anticholinergic medicines (see also section 4.5). If a patient experiences such events, drug discontinuation should be considered.

Sublingual nitrates may fail to dissolve under the tongue owing to dry mouth, resulting in reduced therapeutic effect.

The use/administration of oxybutynin products may warrant the following cautionary statements:

##### *Gastrointestinal disorders*

Anticholinergic medicinal products may decrease gastrointestinal motility and should be used with caution in patients with gastrointestinal obstructive disorders because of the risk of gastric retention. They should also be used with caution in patients who have hiatus hernia/gastro-oesophageal reflux.

Anticholinergic medicinal products should be used with caution in patients who have autonomic neuropathy or cognitive impairment.

Patients should be informed that heat prostration (fever and heat stroke due to decreased sweating) can occur when anticholinergics such as oxybutynin are used in a hot environment.

Oxybutynin may exacerbate the symptoms of hyperthyroidism, coronary heart disease, congestive heart failure, cardiac arrhythmias, tachycardia, hypertension and prostatic hypertrophy.

Oxybutynin may lead to suppressed salivary secretions which could result in dental caries, parodontosis or oral candidiasis.

##### Paediatric population

In children Velariq should be used with caution as they may be more sensitive to the effects of the product, particularly the CNS and psychiatric adverse reactions.

This medicinal product contains 3.5 mg sodium per ml, equivalent to 0.18% of the WHO recommended maximum daily intake of 2 g sodium for an adult.

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

Anticholinergic agents may potentially alter the absorption of some concomitantly administered medicinal products due to anticholinergic effects on gastrointestinal motility.

Anticholinergic medicinal products should be used with caution in patients who are concurrently taking medicinal products (such as bisphosphonates) that can cause or exacerbate oesophagitis.

Oxybutynin is metabolised by cytochrome P 450 isoenzyme CYP 3A4. By applying

oxybutynin intravesically, this first-pass metabolism is mainly circumvented. However, interactions with medicinal products that inhibit cytochrome P 450 isoenzyme CYP 3A4 cannot be ruled out. This should be borne in mind when using azole antifungals (e.g. ketoconazole) or macrolide antibiotics (e.g. erythromycin) concurrently with oxybutynin.

The anticholinergic activity of oxybutynin is increased by concurrent use of other anticholinergics or medicinal products with anticholinergic activity, such as amantadine and other anticholinergic antiparkinsonian medicinal products (e.g. biperiden, levodopa), antihistamines, antipsychotics (e.g. phenothiazines, butyrophenones, clozapine), quinidine, tricyclic antidepressants, atropine and related compounds like atropinic antispasmodics, dipyridamole.

Oxybutynin may antagonise prokinetic therapy.

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

### Pregnancy

There are no data on the intravesical use of oxybutynin in pregnant women. Studies in animals have shown minor reproductive toxicity (see section 5.3). Velariq should not be used during pregnancy unless the clinical condition of the woman requires treatment.

### Breast-feeding

Available information shows that oxybutynin is excreted in milk of rats, but it is not known whether oxybutynin is excreted in human milk. Use of oxybutynin is not recommended during breast-feeding.

### Fertility

Data on possible effects of the use of oxybutynin on human male and female fertility are not available.

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

Because Velariq may produce somnolence, or accommodation disorders, patients should be advised to exercise caution when driving or using machinery.

Patients should be informed that alcohol may enhance the drowsiness caused by anticholinergic agents such as oxybutynin.

## **4.8 Undesirable effects**

Undesirable effects observed with oxybutynin hydrochloride such as dry mouth, somnolence, and constipation mainly reflect the typical anticholinergic properties of the active ingredient.

Table 4 includes adverse reactions from clinical trials with intravesical use of oxybutynin hydrochloride. The adverse reactions are classified by System Organ Class and frequency, using

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).

*Table 4: Adverse reactions from clinical trials with intravesical use of oxybutynin hydrochloride*

<b>System Organ Class</b>	<b>Adverse reaction</b>	<b>Frequency</b>
<b>Infections and infestations</b>	Urinary tract infection, asymptomatic bacteriuria	unknown
<b>Endocrine disorders</b>	Hyperprolactinaemia, prolactin increase (once-only)	unknown
<b>Psychiatric disorders</b>	Listless, hallucinations, cognitive disorders, hyperactivity, insomnia, agoraphobia, disorientation	unknown
<b>Nervous system disorders</b>	Disturbance in attention, dizziness, headache, somnolence, fatigue, dysgeusia, depressed level of consciousness, loss of consciousness, anticholinergic syndrome, seizure	unknown
<b>Ear and labyrinth disorders</b>	Vertigo	unknown
<b>Eye disorders</b>	Dry eye, abnormal sensation in eye, accommodation disorder	unknown
<b>Cardiac disorders</b>	Supraventricular tachycardia	unknown
<b>Vascular disorders</b>	Hypotension, facial flushing	unknown
<b>Gastrointestinal Disorders</b>	Constipation, dry mouth, abdominal discomfort, abdominal pain lower, abdominal pain upper, nausea, dyspepsia, diarrhoea	unknown
<b>Skin and subcutaneous tissue disorders</b>	Hypohidrosis, rash, nocturnal sweating	unknown
<b>Renal and urinary disorders</b>	Micturition urgency, proteinuria, haematuria, micturition disorder	unknown
<b>General disorders and administration site conditions</b>	Instillation site pain, thirst, chest discomfort, feeling cold	unknown

One patient experienced decreased oxygen saturation during home oxygen therapy (see section 4.3).

#### Paediatric population

Children may be more sensitive to the effects of the product, particularly the CNS and psychiatric adverse reactions.

Adverse reactions known to be associated with anticholinergic therapy, but not observed with intravesical use of oxybutynin during clinical studies are vomiting, anorexia, decreased appetite, dysphagia, gastroesophageal reflux disease, pseudo-obstruction in patients at risk (elderly or patients with constipation and treated with other drugs that decrease intestinal motility), confusional state, agitation, anxiety, nightmares, paranoia, symptoms of depression, dependence to oxybutynin (in patients with history of drug or substance abuse), arrhythmia, heat stroke, angle closure glaucoma, ocular hypertension, dry skin, angioedema, urticaria, photosensitivity, hypersensitivity.

### 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 Yellow Card Scheme, Website: [www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard) or search for MHRA Yellow Card in the Google Play or Apple App Store.

## **4.9 Overdose**

No cases of overdose have been reported with intravesical use of oxybutynin.

### Symptoms

The symptoms of overdosage with oxybutynin progress from an intensification of the usual side effects of CNS disturbances (from restlessness and excitement to psychotic behaviour), circulatory changes (flushing, fall in blood pressure, circulatory failure etc.), respiratory failure, paralysis and coma.

### Treatment

The bladder should be emptied immediately via the catheter.

In case of overdose, patients should be closely monitored and treated symptomatically.

## **5 PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Urologicals – drugs for urinary frequency and incontinence, ATC code: G04B D04.

#### Mechanism of action

Oxybutynin acts as a competitive antagonist of acetylcholine at post-ganglionic muscarinic receptors, resulting in relaxation of bladder smooth muscle.

Oxybutynin hydrochloride is an anticholinergic agent, which also exerts a direct antispasmodic effect on smooth muscle. It inhibits bladder contraction and relieves spasm induced by various stimuli; it increases bladder volume, diminishes the frequency of contractions and delays the desire to void in the disturbance of neurogenic bladder. The relaxation of smooth muscle results from the papaverin like effect of the antagonism of the processes distal to the neuromuscular junction in addition to the anticholinergic blocking action of the muscarinic type receptors. In addition, oxybutynin hydrochloride has local anaesthetic properties.

#### Pharmacodynamic effects

Pharmacodynamic properties of oxybutynin were studied after intravesical application to children with neurogenic detrusor overactivity. The effects on incontinence and urodynamic variables were pronounced, improving both in the majority of cases. Number of hyperactive contractions decreased significantly. Increase of mean cystometric bladder capacity and mean cystometric-to-expected bladder capacity was shown while end filling bladder pressure decreased.

#### Clinical efficacy and safety

The efficacy of intravesical oxybutynin treatment of neurogenic bladder dysfunction has been investigated in clinical studies in both short-term and long-term use.

In almost all studies, intravesical treatment with oxybutynin hydrochloride was efficacious in patients suffering from neurogenic detrusor overactivity and was shown to be well tolerated. The NDO was mainly the result of a spinal cord injury (including paraplegia and tetraplegia) or meningomyelocele although also a limited number of patients with multiple sclerosis Parkinson's disease, neoplasia and stroke were included in the studies.

The efficacy and safety of intravesical (3 x 10 mg daily) vs. oral (3 x 5 mg daily) administration of oxybutynin was investigated in a randomised controlled trial in 35 adult patients with neurogenic detrusor overactivity. After 4 weeks of treatment, the increase in maximum bladder capacity (primary efficacy endpoint) was  $116.6 \pm 27.5$  mL with intravesical application ( $p=0.0002$ ) vs.  $18.1 \pm 27.5$  mL with oral application ( $p=0.51$ ). The difference was statistically significant ( $p=0.0086$ ). For both treatments, statistically significant differences compared to baseline were also observed for other parameters such as maximum detrusor pressure and detrusor compliance. During extended treatment with intravesical oxybutynin (median duration of 338 days,  $n=15$ ), maximum bladder capacity remained on the level observed during the preceding controlled treatment period (Schröder et al., 2016).

In a prospective clinical trial in 15 children, mean cystometric bladder capacity increased from 114.2 mL at baseline to 127.4 mL ( $p>0.05$ ) and 161.1 mL ( $p=0.0091$ ) after 1.5 hours and 4 months of intravesical treatment, respectively (Buyse et al., 1995). Mean bladder compliance was significantly increased from 2.5 mL/cm H<sub>2</sub>O at baseline to 11.495 mL/cm H<sub>2</sub>O ( $p=0.0114$ ) after 4 months of therapy. In a further prospective trial in 13 children, 12 showed markedly improved continence after intravesical treatment (Åmark et al., 1998). In a retrospective long-term evaluation in 13 children, the mean end filling bladder pressure decreased from  $52.5 \pm 24$  to  $24.5 \pm 14.4$  cm H<sub>2</sub>O (Humblert et al., 2014).

## 5.2 Pharmacokinetic properties

### Absorption

Intravesical oxybutynin is well absorbed through the bladder wall into systemic circulation. Measurements of oxybutynin plasma concentrations after intravesical administration revealed extensive inter-individual variability, but there was a substantial absorption of the drug also after intravesical application with maximum concentrations in plasma achieved after about one hour.

The pharmacokinetics of intravesical oxybutynin hydrochloride has been investigated in healthy volunteers. Systemic exposure (AUC) to racemic oxybutynin was significantly greater after instillation (294 %) compared to oral administration. In contrast, systemic exposure of the metabolite N-desethyl- oxybutynin was significantly lower after instillation (21 % of exposure after oral administration). As a consequence, the metabolite-to-parent ratio was 14-fold lower in case of intravesical application.

These observations clearly indicate that the mode of administration strongly influences absorption and, in particular, first-pass metabolism of oxybutynin. Obviously, the first-pass effect is significantly reduced in case of intravesical application.

Considering the reported oxybutynin bioavailability of about 6 % after oral administration, an absolute bioavailability of about 20 % might be estimated for the parent compound after intravesical instillation.

### Distribution

Oxybutynin is widely distributed in body tissues following systemic absorption. The volume of distribution was estimated to be 193 l after intravenous administration of 5 mg oxybutynin hydrochloride.

### Biotransformation

Oxybutynin administered orally is metabolised primarily by the cytochrome P450 enzyme systems, particularly CYP3A4, found mostly in the liver and gut wall. Metabolites include phenylcyclohexylglycolic acid, which is pharmacologically inactive, and N-desethyloxybutynin (DEOB), which is pharmacologically active.

Intravesical administration of oxybutynin mainly circumvents the first-pass gastrointestinal and hepatic metabolism, reducing the formation of the N-desethyl metabolite.

The N-desethyl metabolite appears to produce greater anticholinergic side effects, particularly on the salivary glands, than the parent compound.

### Elimination

Oxybutynin is rapidly excreted from the body after oral and intravesical administration. It was concluded from PK studies that intravesical oxybutynin exhibits a prolonged elimination compared to oral administration with reported elimination half-lives of 2.56 and 1.48 h, respectively.

Concentrations of both, oxybutynin and its main metabolite N-desethyloxybutynin were still detectable in serum 24 h after intravesical administration.

## **5.3 Preclinical safety data**

Non-clinical data reveal no special hazard for humans based on studies of acute toxicology, repeat-dose toxicity, genotoxicity, carcinogenic potential and local toxicity.

At maternal toxic doses, oxybutynin administered orally can cause foetal malformations in rats.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Hydrochloric acid, dilute  
Sodium chloride  
Water for injections

### **6.2 Incompatibilities**

Not known.

### **6.3 Shelf life**

3 years

The prefilled syringes are single dose containers - Any unused product must be discarded immediately.

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

This medicine does not require any special storage conditions.  
For storage conditions after first opening of the medicinal product, see section 6.3.

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

10 ml solution in a sterile prefilled syringe (cycloolefin copolymer) with a plunger stopper (synthetic bromobutyl rubber) and a tip cap (synthetic bromobutyl rubber).

Trays with 12, 96 and 96 (hospital pack) prefilled syringes including 12 respectively 96 sterile adapters as application aid.

Not all pack sizes may be marketed.

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

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

## **7 MARKETING AUTHORISATION HOLDER**

MEDICE Arzneimittel Pütter GmbH & Co. KG  
Kuhloweg 37  
58638 Iserlohn  
Germany

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

PL 11243/0046

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

28/04/2022

**10 DATE OF REVISION OF THE TEXT**

19/05/2026