DITROPAN® XL
(oxybutynin chloride)
Extended Release Tablets

DESCRIPTION
DITROPAN® XL (oxybutynin chloride) is an antispasmodic, anticholinergic agent. Each DITROPAN® XL Extended Release Tablet contains 5 mg, 10 mg or 15 mg of oxybutynin chloride USP, formulated as a once-a-day controlled-release tablet for oral administration. Oxybutynin chloride is administered as a racemate of R- and S- enantiomers. Chemically, oxybutynin chloride is d,l (racemic) 4-diethylamino-2-butynyl phenylcyclohexylglycinate hydrochloride. The empirical formula of oxybutynin chloride is C26H34NO7 + HCl. Its structural formula is:

Oxybutynin chloride is a white crystalline solid with a molecular weight of 393.9. It is readily soluble in water and acids, but relatively insoluble in alkalis. DITROPAN® XL also contains the following inert ingredients: cellulose acetate, hydroxypropyl methylcellulose, lactose, magnesium stearate, polyethylene glycol, polyethylene oxide, synthetic iron oxides, titanium dioxide, polyethylene 80, sodium chloride, and butylated hydroxytoluene.

System Components and Performance
DITROPAN® XL uses osmotic pressure to deliver oxybutynin chloride at a controlled rate over approximately 24 hours. The system, which resembles a conventional tablet in appearance, comprises an osmotically active bilayer core surrounded by a semipermeable membrane. The bilayer core is composed of a drug layer containing the drug and excipients, and a push layer containing osmotically active components. There is a precision-laser drilled orifice in the semipermeable membrane that allows osmotically active material to exit the core during administration. The volume of distribution is 193 L after intravenous administration of 5 mg oxybutynin chloride.

Clinical Pharmacology
Oxybutynin chloride exerts a direct antispasmodic effect on smooth muscle and inhibits the micturition action of acetylcholine on smooth muscle. Oxybutynin chloride exhibits only one-fifth the anticholinergic activity of atropine on the rabbit detrusor muscle, but four to ten times the anticholinergic action of acetylcholine on smooth muscle. Oxybutynin chloride is a white crystalline solid with a molecular weight of 393.9. It is readily soluble in water and acids, but relatively insoluble in alkalis.

Metabolism
Oxybutynin chloride is metabolized primarily by the cytochrome P450 enzyme systems, particularly CYP3A4, found mostly in the liver and gut wall. Its metabolic products include phenyldihydroxyglycic acid, which is pharmacologically inactive, and desethyloxybutynin, which is pharmacologically active. Following DITROPAN® XL administration, plasma concentrations of R- and S-desethyloxybutynin are 73% and 92%, respectively, of concentrations observed with oxybutynin.

Excretion
Oxybutynin chloride is extensively metabolized by the liver, with less than 0.1% of the administered dose excreted unchanged in the urine. Also, less than 0.3% of the administered dose is excreted as the metabolite desethyl oxybutynin.

Number of Urge Urinary Incontinence Episodes Per Week

Study 1
<table>
<thead>
<tr>
<th>N</th>
<th>DITROPAN® XL</th>
<th>N</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Baseline</td>
<td>34</td>
<td>15.9</td>
<td>16</td>
</tr>
<tr>
<td>Mean (SD) Change from Baseline</td>
<td>-15.8 (8.9)</td>
<td>16</td>
<td>-7.6 (8.6)</td>
</tr>
</tbody>
</table>

95% Confidence Interval for Difference (-13.6, -2.8)*

† Covariate adjusted mean with missing observations set to baseline values

* The difference between DITROPAN® XL and placebo was statistically significant.
† Covariate adjusted mean with missing observations set to baseline values

Study 2
<table>
<thead>
<tr>
<th>N</th>
<th>DITROPAN® XL</th>
<th>N</th>
<th>oxybutynin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Baseline</td>
<td>53</td>
<td>27.6</td>
<td>52</td>
</tr>
<tr>
<td>Mean (SD) Change from Baseline</td>
<td>-17.6 (11.9)</td>
<td>52</td>
<td>-19.4 (11.9)</td>
</tr>
</tbody>
</table>

95% Confidence Interval for Difference (-2.6, 6.5)*

† Covariate adjusted mean with missing observations set to baseline values

Study 3
<table>
<thead>
<tr>
<th>N</th>
<th>DITROPAN® XL</th>
<th>N</th>
<th>oxybutynin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Baseline</td>
<td>111</td>
<td>18.9</td>
<td>115</td>
</tr>
<tr>
<td>Mean (SD) Change from Baseline</td>
<td>-14.3 (8.7)</td>
<td>115</td>
<td>-13.8 (8.6)</td>
</tr>
</tbody>
</table>

95% Confidence Interval for Difference (-3.0, 3.6)**

† Covariate adjusted mean with missing observations set to baseline values

Dose Proportionality
Pharmacokinetic parameters of oxybutynin and desethyl oxybutynin (Cmax and AUC) following administration of 5-20 mg of DITROPAN® XL are dose proportional.

Special Populations
Geriatric: The pharmacokinetics of DITROPAN® XL were similar in all patients studied (up to 78 years of age).
Pediatric: The pharmacokinetics of DITROPAN® XL were not evaluated in individuals younger than 18 years of age. See PRECAUTIONS: Pediatric Use.
Gender: There are no significant differences in the pharmacokinetics of oxybutynin in healthy male and female volunteers following administration of DITROPAN® XL.

Race: Available data suggest that there are no significant differences in the pharmacokinetics of oxybutynin based on race in healthy volunteers following administration of DITROPAN® XL.

Renal Insufficiency: There is no experience with the use of DITROPAN® XL in patients with renal insufficiency.

Hepatic Insufficiency: There is no experience with the use of DITROPAN® XL in patients with hepatic insufficiency.


Clinical Studies
DITROPAN® XL was evaluated for the treatment of patients with overactive bladder with symptoms of urgency, frequency, and incontinence in three controlled studies and one open label study. The majority of patients were Caucasian (80.0%) and female (91.9%) with a mean age of 59 years (range, 18 to 98 years). Entry criteria required that patients have urge or mixed incontinence (with a predominance of urge) as evidenced by ≥ 6 urge incontinence episodes per week and ≥ 10 incontinence episodes per day. Study 1 was a forced dose escalation design, whereas the other studies used a dose adjustment design in which each patient’s final dose was adjusted to a balance between improvement of incontinence symptoms and tolerability of side effects. Controlled studies included patients known to be responsive to oxybutynin or other anticholinergic medications, and these patients were maintained on a final dose for up to 2 weeks.

The efficacy results for the three controlled trials are presented in the following tables and figures.

Table 1
Mean (SD) R- and S-Oxybutynin Pharmacokinetic Parameters Following a Single Dose of DITROPAN® XL 10 mg (n=33)

<table>
<thead>
<tr>
<th>Parameters (unit)</th>
<th>R-Oxybutynin</th>
<th>S-Oxybutynin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cmax (ng/mL)</td>
<td>1.6 (0.6)</td>
<td>1.8 (1.0)</td>
</tr>
<tr>
<td>Tmax (h)</td>
<td>12.7 (5.4)</td>
<td>11.8 (5.3)</td>
</tr>
<tr>
<td>T1/2 (h)</td>
<td>13.2 (6.2)</td>
<td>12.4 (6.1)</td>
</tr>
<tr>
<td>AUCinf (ng*h/mL)</td>
<td>18.4 (10.3)</td>
<td>34.2 (16.9)</td>
</tr>
<tr>
<td>AUClast (ng*h/mL)</td>
<td>21.3 (12.2)</td>
<td>39.5 (21.2)</td>
</tr>
</tbody>
</table>

Figure 1. Mean R-oxybutynin plasma concentrations following a single dose of DITROPAN® XL 10 mg and oxybutynin 5 mg administered every 8 hours (n=23 for each treatment).

Steady-state oxybutynin plasma concentrations are achieved by Day 3 of repeated DITROPAN® XL dosing, with no observed drug accumulation or change in oxybutynin and desethyl oxybutynin pharmacokinetic parameters.

Food Effects
The rate and extent of absorption and metabolism of oxybutynin are similar under fed and fasted conditions.

Distribution
Plasma concentrations of oxybutynin decline biexponentially following intravenous or oral administration. The volume of distribution is 193 L after intravenous administration of 5 mg oxybutynin chloride.

Dose-Dependent Pharmacokinetics of Oxybutynin Based on Race in Healthy Volunteers Following Administration of DITROPAN® XL

** The difference between DITROPAN® XL and oxybutynin filled the criteria for comparable efficacy.
† Covariate adjusted mean with missing observations set to baseline values

Dose-Proportional Pharmacokinetic Parameters of Oxybutynin and Desethyl Oxybutynin (Cmax and AUC) Following Administration of 5-20 mg of DITROPAN® XL Are Dose-Proportional
INDICATIONS AND USAGE
DITROPAN® XL is a once-daily controlled-release tablet indicated for the treatment of overactive bladder with symptoms of urge urinary incontinence, urgency, and frequency.

CONTRAINDICATIONS
DITROPAN® XL is contraindicated in patients with urinary retention, gadritic retention, or uncontrolled narrow-angle glaucoma and in patients who are at risk for these conditions.

DITROPAN® XL is also contraindicated in patients who have demonstrated hypersensitivity to the drug substance or other components of the product.

PRECAUTIONS
General
DITROPAN® XL should be used with caution in patients with hepatic or renal impairment.

Urinary Retention:
DITROPAN® XL should be administered with caution to patients with clinically significant bladder outflow obstruction because of the risk of urinary retention (see CONTRAINDICATIONS).

Gastrointestinal Disorders:
DITROPAN® XL should be administered with caution to patients with gastrointestinal obstructive disorders because of the risk of gadritic retention (see CONTRAINDICATIONS).

DITROPAN® XL, like other anticholinergic drugs, may decrease gastrointestinal motility and should be used with caution in patients with conditions such as ulcerative colitis, intestinal atony, and myasthenia gravis.

DITROPAN® XL should be used with caution in patients who have gastrointestinal reflux and/or who are concurrently taking drugs (such as biophosphonates) that can cause esophageal esophagitis.

As with any other nondeformable material, caution should be used when administering DITROPAN® XL to patients with preexisting severe gastrointestinal narrowing (pathologic or iatrogenic). There have been rare reports of obstructive symptoms in patients with known strictures in association with the ingestion of other drugs in nondeformable controlled-release formulations.

Information for Patients
Patients should be informed that heat prostration (fever and heat stroke due to decreased sweating) can occur when anticholinergics such as oxybutynin chloride are administered in the presence of high environmental temperature.

Because anticholinergic agents such as oxybutynin may produce dryness (somenolence) or blurred vision, patients should be advised to exercise caution.

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

Patients should be informed that DITROPAN® XL should be swallowed whole with the aid of liquids. Patients should not chew, divide, or crush tablets. The medication is contained within a non-absorbable shell designed to release the drug at a controlled rate. The tablet shell is eliminated from the body; patients should not be concerned if they occasionally notice in their stool something that looks like a tablet.

Drug Interactions
The concomitant use of oxybutynin with other anticholinergic drugs or with other agents which produce dry mouth, constipation, somnolence (drowsiness), and/or other anticholinergic-like effects may increase the frequency and/or severity of such effects.

Anticholinergic agents may potentially alter the absorption of some concurrently administered drugs due to anticholinergic effects on gastrointestinal motility.

Pharmacokinetic studies with patients concomitantly receiving cytochrome P450 enzyme inhibitors, such as antimyotic agents (e.g. ketonozapate, trirazole, and ciminoazole) or macrolide antibiotics (e.g. erythromycin and clarithromycin), have not been performed.

No specific drug-drug interaction studies have been performed with DITROPAN® XL.

Cardiogenic, Mutagenesis, Impairment of Fertility
A 24-month study in rats at dosages of oxybutynin chloride of 20, 80 and 160 mg/kg day showed no evidence of cardiogenicity. These doses are approximately 6, 25 and 50 times the maximum human exposure, based on surface area.

Oxybutynin chloride showed no increase of mutagenic activity when tested in Salmonella typhimurium strains TA1537, TA1538, TA1539, TA1541, and TA1535, and in Chinese hamster V79 cells. Oxybutynin chloride did not induce mutations in the in vivo mouse lymphoma assay.

Reproduction studies with oxybutynin chloride in the mouse, rat, hamster, and rabbit showed no definite evidence of impaired fertility.

Pregnancy: Teratogenic Effects
Pregnancy Category B
Reproduction studies with oxybutynin chloride in the mouse, rat, hamster, and rabbit showed no definite evidence of impaired fertility or harm to the animal fetus. The safety of DITROPAN® XL administration to women who are or who may become pregnant has not been established. Therefore, DITROPAN® XL should not be given to pregnant women unless, in the judgment of the physician, the probable clinical benefits outweigh the possible hazards.

Nursing Mothers
It is not known whether oxybutynin is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when DITROPAN® XL is administered to a nursing woman.

Pediatric Use
The safety and efficacy of DITROPAN® XL in pediatric patients have not been established.

Geriatric Use
The rate and severity of anticholinergic effects reported by patients less than 65 years old and those 65 years and older were similar (See CLINICAL PHARMACOLOGY, Pharmacokinetics, Special Populations: Gender).

ADVERSE REACTIONS

Adverse Events with DITROPAN® XL

The safety and efficacy of DITROPAN® XL was evaluated in a total of 580 patients who received DITROPAN® XL in clinical trials (429 patients, 151 healthy volunteers). These patients were treated with 5-30 mg/day for up to 4.5 months. Safety information is provided for 429 patients from three controlled clinical studies and one open label study (Table 2). The adverse events are reported regardless of causality.

Table 2
Incidence (%) of Adverse Events Reported by >5% of Patients Using DITROPAN® XL (5-30 mg/day)

<table>
<thead>
<tr>
<th>Body System</th>
<th>Adverse Event</th>
<th>DITROPAN® XL 5-30 mg/day (n=429)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>headache</td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>asthenia</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td>pain</td>
<td>6.8</td>
</tr>
<tr>
<td>Digestive</td>
<td>dry mouth</td>
<td>60.8</td>
</tr>
<tr>
<td></td>
<td>constipation</td>
<td>13.1</td>
</tr>
<tr>
<td></td>
<td>diarrhea</td>
<td>9.1</td>
</tr>
<tr>
<td></td>
<td>nausea</td>
<td>8.9</td>
</tr>
<tr>
<td>Nervous</td>
<td>somnolence</td>
<td>11.9</td>
</tr>
<tr>
<td></td>
<td>dizziness</td>
<td>6.3</td>
</tr>
<tr>
<td>Respiratory</td>
<td>rhinitis</td>
<td>5.6</td>
</tr>
<tr>
<td>Special senses</td>
<td></td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td>blurred vision</td>
<td>6.1</td>
</tr>
<tr>
<td>Urogenital</td>
<td>urinary tract infection</td>
<td>5.1</td>
</tr>
</tbody>
</table>

The most common adverse events reported by patients receiving 5-30 mg/day DITROPAN® XL were the expected side effects of anticholinergic agents. The incidence of dry mouth was dose-related.

The discontinuation rate for all adverse events was 6.8%. The most frequent adverse event causing early discontinuation of study medication was nausea (1.9%), while discontinuation due to dry mouth was 1.2%.

In addition, the following adverse events were reported by 2 to <5% of patients using DITROPAN® XL (5-30 mg/day) in all studies. General: abdominal pain, dry nasal and sinus mucous membranes, accidental injury, back pain, flu syndrome, systemic lupus erythematosus, fever, headache, hypertension, non-osmotic diabetes insipidus, phlebitis, rash, urinary tract infections (bacterial), vomiting.

Adverse Events with Oxybutynin Chloride

Other adverse events have been reported with oxybutynin chloride: tachycardia, hallucinations, dysarthria, mydriasis, impotence, and suppression of lactation.

OVERDOSAGE

The continuous release of oxybutynin from DITROPAN® XL should be considered in the treatment of overdose. Patients should be monitored for at least 24 hours. Treatment should be symptomatic and supportive. Activated charcoal as well as a cathartic may be administered.

Overdose with oxybutynin has been associated with anticholinergic effects including CNS excitation, flushing, fever, dehydration, cardiac arrhythmia, vomiting, and urinary retention.

Ingestion of 100 mg oxybutynin chloride in association with alcohol has been reported in a 13 year old boy who experienced memory loss, and a 34 year old woman who developed stupor, followed by disorientation and agitation on awakening, dilated pupils, dry skin, cardiac arrhythmia, and retention of urine. Both patients fully recovered with symptomatic treatment.

DOSAGE AND ADMINISTRATION

DITROPAN® XL must be swallowed whole with the aid of liquids, and must not be chewed, divided, or crushed.

DITROPAN® XL may be administered with or without food.

The recommended starting dose of DITROPAN® XL is 5 mg once daily. Dosage may be adjusted in 5-mg increments to achieve a balance of efficacy and tolerability (up to a maximum of 30 mg/day). In general, dosage adjustment may proceed at approximately weekly intervals.

HOW SUPPLIED

DITROPAN® XL (oxybutynin chloride) Extended Release Tablets are available in three dosage strengths, 5 mg (pale yellow), 10 mg (pink) and 15 mg (gray) and are imprinted with “ALZA 5”, “ALZA 10” or “ALZA 15”. DITROPAN® XL Extended Release Tablets are supplied in bottles of 100 tablets.

Manufactured, distributed, and marketed by ALZA Corporation, Palo Alto, CA 94304.

Marketed by UCB Pharma, Inc., Smyrna, GA 30080.

Storage
Store at 25°C (77°F); excursions permitted to 15-30°C (59-86°F) [see USP Controlled Room Temperature]. Protect from moisture and humidity.

Rx only
For more information call 1-888-395-1232 or visit www.DitropanXL.com