

HIGHLIGHTS OF PRESCRIBING INFORMATION
These highlights do not include all the information needed to use **DUTASTERIDE AND TAMUSOLIN HYDROCHLORIDE CAPSULES** safely and effectively. See full prescribing information for **DUTASTERIDE AND TAMUSOLIN HYDROCHLORIDE CAPSULES**.

DUTASTERIDE AND TAMUSOLIN HYDROCHLORIDE capsules, for oral use

Initial U.S. Approval: 2010

RECENT MAJOR CHANGES
Contraindications (4) 12/2020

INDICATIONS AND USAGE
Dutasteride and tamsulosin hydrochloride capsules are a combination of dutasteride, a 5- α -reductase inhibitor, and tamsulosin, an alpha-adrenergic antagonist, indicated for the treatment of symptomatic benign prostatic hyperplasia (BPH) in men with an enlarged prostate. (1.1)

Limitations of Use: Dutasteride-containing products, including dutasteride and tamsulosin hydrochloride capsules, are not approved for the prevention of prostate cancer. (1.2)

DOSAGE AND ADMINISTRATION
• Take one capsule daily approximately 30 minutes after the same meal each day. (2)
• Swallow capsule whole. (2)

DOSAGE FORMS AND STRENGTHS
0.5 mg dutasteride and 0.4 mg tamsulosin hydrochloride. (3)

CONTRAINDICATIONS
• Pregnancy. Dutasteride use is contraindicated in females who are pregnant. (4, 5.6, 8.1)
• Patients with previously demonstrated, clinically significant hypersensitivity (e.g., serious skin reactions, angioedema, urticaria, pruritus, respiratory symptoms) to dutasteride, other 5- α -reductase inhibitors, tamsulosin, or any component of dutasteride and tamsulosin hydrochloride capsules. (4)

WARNINGS AND PRECAUTIONS
• Orthostatic hypotension and/or syncope can occur. Advise patients of symptoms related to postural hypotension and to avoid situations where injury could result if syncope occurs. (5.1)
• Do not use dutasteride and tamsulosin hydrochloride capsules with other alpha-adrenergic antagonists, as this may increase the risk of hypotension. (5.2)
• Dutasteride and tamsulosin hydrochloride capsules reduce serum prostate-specific antigen (PSA)

concentration by approximately 50%. However, any confirmed increase in PSA while on dutasteride and tamsulosin hydrochloride capsules may signal the presence of prostate cancer and should be evaluated, even if those values are still within the normal range for untreated men. (5.3)
• Do not use dutasteride and tamsulosin hydrochloride capsules with strong inhibitors of cytochrome P450 (CYP) 3A4 (e.g., ketoconazole). Use caution in combination with moderate CYP3A4 inhibitors (e.g., erythromycin) or strong (e.g., paroxetine) or moderate CYP2D6 inhibitors, a combination of both CYP3A4 and CYP2D6 inhibitors, or known poor metabolizers of CYP2D6. Concomitant use with strong cytochrome P450 inhibitors may cause a marked increase in drug exposure. (5.2, 7.1, 12.3)
• Exercise caution with concomitant use of phosphodiesterase-5 (PDE-5) inhibitors, as this may increase the risk of hypotension. (5.2)
• Drugs that contain dutasteride, including dutasteride and tamsulosin hydrochloride capsules, may increase the risk of high-grade prostate cancer. (5.4, 6.1)
• Prior to initiating treatment with dutasteride and tamsulosin hydrochloride capsules, consideration should be given to other urological conditions that may cause similar symptoms. (5.5)
• Females who are pregnant or may be pregnant should not handle dutasteride and tamsulosin hydrochloride capsules due to potential risk to a male fetus. (5.6, 8.1)
• Advise patients about the possibility and seriousness of priapism. (5.7)
• Patients should not donate blood until 6 months after their last dose of dutasteride and tamsulosin hydrochloride capsules. (5.8)
• Intraoperative Floppy Iris Syndrome has been observed during cataract and glaucoma surgery after alpha-adrenergic antagonist exposure. Advise patients considering cataract or glaucoma surgery to tell their ophthalmologist that they take or have taken dutasteride and tamsulosin hydrochloride capsules. (5.9)
• Exercise caution with concomitant use of warfarin. (5.2, 7.2, 12.3)

ADVERSE REACTIONS
The most common adverse reactions, reported in 21% of subjects treated with coadministered dutasteride and tamsulosin are ejaculation disorders, impotence, decreased libido, dizziness, and breast disorders. (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Par Pharmaceutical at 1-800-828-9393 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

See 17 for PATIENT COUNSELING INFORMATION and FDA- approved patient labeling.

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FULL PRESCRIBING INFORMATION

1 INDICATIONS AND USAGE

1.1 Benign Prostatic Hyperplasia (BPH) Treatment
Dutasteride and tamsulosin hydrochloride capsules are indicated for the treatment of symptomatic BPH in men with an enlarged prostate.
1.2 Limitations of Use
Dutasteride-containing products, including dutasteride and tamsulosin hydrochloride capsules, are not approved for the prevention of prostate cancer.

2 DOSAGE AND ADMINISTRATION

The recommended dose of dutasteride and tamsulosin hydrochloride capsules is 1 capsule (0.5 mg dutasteride and 0.4 mg tamsulosin hydrochloride) taken one daily approximately 30 minutes after the same meal each day.

The capsules should be swallowed whole and not chewed or opened. Contact with the contents of the dutasteride and tamsulosin hydrochloride capsule may result in irritation of the oropharyngeal mucosa.

3 DOSAGE FORMS AND STRENGTHS

Dutasteride and tamsulosin hydrochloride capsules, containing 0.5 mg dutasteride and 0.4 mg tamsulosin hydrochloride, are capsules with blue opaque cap imprinted with "C30" in black ink containing white to off-white spherical shaped pellets and one oblong, opaque yellow softgel capsule imprinted with "C300" in black ink.

4 CONTRAINDICATIONS

Dutasteride and tamsulosin hydrochloride capsules are contraindicated for use in:
• Pregnancy. Dutasteride use is contraindicated in females who are pregnant. In animal reproduction and developmental toxicity studies, dutasteride inhibited development of male fetus external genitalia. Therefore, dutasteride and tamsulosin hydrochloride capsules may cause male harm when administered to a pregnant female. (See **Warnings and Precautions (5.6)**, **Use in Specific Populations (8.1)**)
• Patients with previously demonstrated, clinically significant hypersensitivity (e.g., serious skin reactions, angioedema, urticaria, pruritus, respiratory symptoms) to dutasteride, other 5- α -reductase inhibitors, tamsulosin, or any other component of dutasteride and tamsulosin hydrochloride capsules. (See **Adverse Reactions (6.2)**)

5 WARNINGS AND PRECAUTIONS

5.1 Orthostatic Hypotension
As with other alpha-adrenergic antagonists, orthostatic hypotension (postural hypotension, dizziness, and vertigo) may occur in patients treated with tamsulosin-containing products, including dutasteride and tamsulosin hydrochloride capsules, and may occur in syncope. Patients starting treatment with dutasteride and tamsulosin hydrochloride capsules should be cautioned to avoid situations where syncope could result in an injury (See **Drug Interactions (7.1)**, **Clinical Pharmacology (12.3)**).

5.2 Drug-Drug Interactions

Strong Inhibitors of Cytochrome P450 (CYP) 3A4
Dutasteride and tamsulosin hydrochloride capsules, including dutasteride and tamsulosin hydrochloride capsules, should not be coadministered with strong CYP3A4 inhibitors (e.g., ketoconazole) as this can significantly increase tamsulosin exposure (See **Drug Interactions (7.1)**, **Clinical Pharmacology (12.3)**).

Moderate Inhibitors of CYP3A4, Inhibitors of CYP2D6, or a Combination of Both CYP3A4 and CYP2D6 Inhibitors
Dutasteride and tamsulosin hydrochloride capsules, including dutasteride and tamsulosin hydrochloride capsules, should be used with caution when coadministered with moderate inhibitors of CYP3A4 (e.g., erythromycin), strong (e.g., paroxetine) or moderate (e.g., terbinafine) inhibitors of CYP2D6, a combination of both CYP3A4 and CYP2D6 inhibitors, or in patients known to be poor metabolizers of CYP2D6, as there is a potential for significant increase in tamsulosin exposure (See **Drug Interactions (7.1)**, **Clinical Pharmacology (12.3)**).

Concomitant Use

Caution is advised when tamsulosin-containing products, including dutasteride and tamsulosin hydrochloride capsules, are coadministered with cimetidine (See **Drug Interactions (7.1)**, **Clinical Pharmacology (12.3)**).

Other Alpha-Adrenergic Antagonists
Tamsulosin-containing products, including dutasteride and tamsulosin hydrochloride capsules, should not be coadministered with other alpha-adrenergic antagonists because of the increased risk of symptomatic hypotension.

Phosphodiesterase-5 (PDE-5) Inhibitors

Caution is advised when alpha-adrenergic-antagonist-containing products, including dutasteride and tamsulosin hydrochloride capsules, are coadministered with PDE-5 inhibitors. Alpha-adrenergic antagonists and PDE-5 inhibitors are both vasodilators that can lower blood pressure. Concomitant use of these 2 drug classes can potentially cause symptomatic hypotension.

Warfarin

Caution should be exercised with concomitant administration of warfarin and tamsulosin-containing products, including dutasteride and tamsulosin hydrochloride capsules (See **Drug Interactions (7.2)**, **Clinical Pharmacology (12.3)**).

5.3 Effects on Prostate-Specific Antigen (PSA) and the Use of PSA in Prostate Cancer Detection

In clinical trials, dutasteride reduced serum PSA concentration by approximately 50% within 3 to 6 months of treatment. This decrease in PSA levels may mask the entire PSA value in patients with symptomatic BPH, although 1 may vary in individuals. Dutasteride-containing treatment, including dutasteride and tamsulosin hydrochloride capsules, may also cause decreases in serum PSA in the presence of prostate cancer. To interpret serial PSA in men treated with a dutasteride-containing product, including dutasteride and tamsulosin hydrochloride capsules, a new baseline PSA should be established at least 3 months after starting treatment and PSA monitored periodically thereafter. Any confirmed increase from the lowest PSA value while on a dutasteride-containing treatment, including dutasteride and tamsulosin hydrochloride capsules, may signal the presence of prostate cancer and should be evaluated, even if PSA levels are still within the normal range for untreated men receiving 5- α -reductase inhibitor. Noncompliance with dutasteride and tamsulosin hydrochloride capsules may also affect PSA test results.

To interpret an isolated PSA value in a man treated with dutasteride and tamsulosin hydrochloride capsules, for 3 months or more, the PSA value should be doubled for comparison with normal values in untreated men.
The free-to-total PSA ratio (percent free PSA) remains constant, even under the influence of dutasteride. If clinically elected to use percent free PSA as an aid in the detection of prostate cancer in men receiving dutasteride and tamsulosin hydrochloride capsules, no adjustment to its value appears necessary.

5.4 Increased Risk of High-Grade Prostate Cancer
In men aged 50 to 75 years with a prior negative biopsy for prostate cancer and a baseline PSA between 2.5 ng/mL and 10.0 ng/mL taking dutasteride in the 4-year Reduction by Dutasteride of Prostate Cancer Events (REDUCE) trial, there was an increased incidence of Gleason score 8 to 10 (dutasteride 1.0% versus placebo 0.5%) (See **Indications and Usage (1.2)**, **Adverse Reactions (6.1)**). In a 7-year placebo-controlled clinical trial with another 5- α -reductase inhibitor (finasteride 5 mg, PROCAR®), similar results for Gleason score 8 to 10 prostate cancer were observed (finasteride 1.8% versus placebo 1.1%).

5- α -reductase inhibitors may increase the risk of development of high-grade prostate cancer. Whether the effect of 5- α -reductase inhibitors to reduce prostate volume or trial-related factors impacted the results of these trials has not been established.

5.5 Evaluation for Other Urological Diseases
Prior to initiating treatment with dutasteride and tamsulosin hydrochloride capsules, consideration should be given to other urological conditions that may cause similar symptoms. In addition, BPH and prostate cancer may coexist.

5.6 Transdermal Exposure of Dutasteride and Tamsulosin Hydrochloride in Pregnant Females—Risk to Male Fetus
Dutasteride and tamsulosin hydrochloride capsules should not be handled by females who are pregnant or may be pregnant. Dutasteride can be absorbed through the skin and may result in unintended, low-level exposure to a male fetus. If a female who is or may be pregnant comes in contact with a leaking capsule, the contact area should be washed immediately with soap and water (See **Use in Specific Populations (8.1)**). Dutasteride can be absorbed through the skin based on animal studies (See **Nonclinical Toxicology (12.3)**).

5.7 Priapism
Priapism (persistent painful penile erection unrelated to sexual activity) has been associated (probably less than 1 in 50,000) with the use of alpha-adrenergic antagonists, including tamsulosin, which is a component of dutasteride and tamsulosin hydrochloride capsules. Because this condition can lead to permanent impotence if not properly treated, patients should be advised about the seriousness of the condition.

5.8 Blood Donation

Men being treated with a dutasteride-containing product, including dutasteride and tamsulosin hydrochloride capsules, should not donate blood until at least 6 months have passed following their last dose. The purpose of this deferred period is to prevent administration of dutasteride to a pregnant female transfusion recipient.

5.9 Intraoperative Floppy Iris Syndrome

Intraoperative Floppy Iris Syndrome (IFIS) has been observed during cataract and glaucoma surgery in some patients on or previously treated with alpha-adrenergic-antagonists, including tamsulosin, which is a component of dutasteride and tamsulosin hydrochloride capsules.

Most reports were in patients taking the alpha-adrenergic-antagonist when IFIS occurred, but in some cases, the alpha-adrenergic-antagonist had been stopped prior to surgery. In most of these cases, the alpha-adrenergic antagonist had been stopped recently prior to surgery (2 to 14 days), but in a few cases, IFIS was reported after the patients had been off the alpha-adrenergic antagonist for a longer period (5 weeks to 9 months). IFIS is a variant of small pupil syndrome and is characterized by the combination of a flaccid iris that billows in response to intraoperative irrigation, progressive intraoperative miosis despite preoperative dilation with standard mydriatic drugs, and potential prolapse of the iris toward the phacoemulsification incisions. The patient's ophthalmologist should be prepared for possible modifications to their surgical technique, such as the utilization of iris hooks, iris dilator rings, or viscoelastic substances.

IFIS may increase the risk of eye complications during and after the operation. The benefit of stopping alpha-adrenergic antagonist therapy prior to cataract or glaucoma surgery has not been established. The initiation of therapy with tamsulosin in patients for whom cataract or glaucoma surgery is scheduled is not recommended.

5.10 Sulfa Allergy

In patients with sulfa allergy, allergic reaction to tamsulosin has been rarely reported. If a patient reports a serious or life-threatening sulfa allergy, caution is warranted when administering tamsulosin-containing products, including dutasteride and tamsulosin hydrochloride capsules.

5.11 Effect on Semen Characteristics

The effects of dutasteride 0.5 mg/day on semen characteristics were evaluated in healthy men throughout 52 weeks of treatment and 24 weeks of post-treatment follow-up. At 52 weeks, compared with placebo, dutasteride treatment resulted in mean reduction in total sperm count, semen volume, and sperm motility; the effects on total sperm count were not reversible after 24 weeks of follow-up. Sperm concentration and sperm morphology were unaffected and mean values for all semen parameters remained within the normal range at all time points. The clinical significance of the effect of dutasteride on semen characteristics for an individual patient's fertility is not known. (See **Use in Specific Populations (8.3)**).

Tamsulosin

The effects of tamsulosin hydrochloride on sperm counts or sperm function have not been evaluated.

6 ADVERSE REACTIONS

6.1 Clinical Trials Experience

The clinical efficacy and safety of coadministered dutasteride and tamsulosin, which are individual components of dutasteride and tamsulosin hydrochloride capsules, have been evaluated in a multicenter, randomized, double-blind, parallel group trial (the CombAt with Alpha-Blocker Therapy, or CombAt, trial). Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared with rates in the clinical trial of another drug and may not reflect rates observed in practice.
• The most common adverse reactions reported in subjects receiving coadministered dutasteride and tamsulosin were impotence, decreased libido, breast disorders (including breast enlargement and tenderness), ejaculation disorders, and dizziness. Ejaculation disorders occurred significantly more in subjects receiving coadministration therapy (11%) compared with those receiving dutasteride 0.5 mg daily (5%) or tamsulosin 0.4 mg daily (5%).
• Trial withdrawal due to adverse reactions occurred in 6% of subjects receiving coadministered dutasteride and tamsulosin and in 4% of subjects receiving dutasteride or tamsulosin as monotherapy. The most common adverse reaction in all treatment arms leading to trial withdrawal was erectile dysfunction (1% to 1.5%).

In the CombAt trial, over 4,800 male subjects with BPH were randomly assigned to receive 0.5 mg dutasteride, 0.4 mg tamsulosin hydrochloride, or a combination of 0.5 mg dutasteride and 0.4 mg tamsulosin hydrochloride administered once daily in a 4-year double-blind trial. Overall, 1,623 subjects received monotherapy with dutasteride; 1,611 subjects received monotherapy with tamsulosin; and 1,610 subjects received coadministration therapy. The population was aged 49 to 83 years (mean age: 66 years) and 88% were white. Table 1 summarizes adverse reactions reported in at least 1% of subjects receiving coadministration therapy and at a higher incidence than subjects receiving dutasteride or tamsulosin as monotherapy.

Table 1. Adverse Reactions Reported over a 48-Month Period in 21% of Subjects and More Frequently in the Coadministration Therapy Group than the Dutasteride or Tamsulosin Monotherapy Group (CombAt) by Time of Onset

Adverse Reaction	Adverse Reaction Time of Onset				
	Year 1		Year 2	Year 3	Year 4
	Months 0-6	Months 7-12			
Coadministration	n = 1,610	n = 1,527	n = 1,428	n = 1,283	n = 1,200
Dutasteride	n = 1,611	n = 1,464	n = 1,325	n = 1,148	n = 1,048
Tamsulosin	n = 1,611	n = 1,545	n = 1,468	n = 1,281	n = 1,112
Ejaculation disorders ^{a,b}					
Coadministration	7.8%	1.6%	1.0%	0.5%	<0.1%
Dutasteride	1.0%	0.5%	0.5%	0.2%	0.3%
Tamsulosin	2.2%	0.5%	0.5%	0.2%	0.3%
Impotence ^{c,d}					
Coadministration	5.4%	1.1%	1.8%	0.9%	0.4%
Dutasteride	4.0%	1.1%	1.6%	0.6%	0.3%
Tamsulosin	2.6%	0.8%	1.0%	0.6%	1.1%
Decreased libido ^e					
Coadministration	4.5%	0.9%	0.8%	0.2%	0.0%
Dutasteride	3.1%	0.7%	1.0%	0.2%	0%
Tamsulosin	2.0%	0.6%	0.7%	0.2%	<0.1%
Breast disorders ^f					
Coadministration	1.1%	0.1%	0.8%	0.9%	0.6%
Dutasteride	0.9%	0.9%	1.2%	0.5%	0.7%
Tamsulosin	0.4%	0.4%	0.4%	0.2%	0.2%
Dizziness					
Coadministration	1.1%	0.4%	0.1%	<0.1%	0.2%
Dutasteride	2.1%	0.2%	0.1%	0.1%	0.1%
Tamsulosin	0.9%	0.5%	0.4%	<0.1%	0.0%

^a Coadministration = dutasteride 0.5 mg once daily plus tamsulosin 0.4 mg once daily.
^b Includes anorgasmia, retrograde ejaculation, semen volume decreased, organic sensation decreased, orgasm abnormal, ejaculation delayed, ejaculatory dysfunction, ejaculation failure, and premature ejaculation.
^c These sexual adverse reactions are associated with dutasteride treatment (including monotherapy and combination with tamsulosin). These adverse reactions may persist after treatment discontinuation. The rate of dutasteride in this persistence is 1.8%.
^d Includes erectile dysfunction and disturbance in sexual arousal.
^e Includes libido decreased, libido disorder, loss of libido, sexual dysfunction, and male sexual dysfunction.
^f Includes breast enlargement, gynaecomastia, breast swelling, breast pain, breast tenderness, nipple pain, and nipple swelling.

Cardiac Failure
In CombAt, after a 4-year of treatment, the incidence of the composite term cardiac failure in the coadministration group (121/610; 0.7%) was higher than in the dutasteride monotherapy group (dutasteride, 221/623 (0.1%) and tamsulosin, 91/611 (0.6%). Composite cardiac failure was also examined in a separate 4-year placebo-controlled trial evaluating dutasteride in men at risk for development of prostate cancer. The incidence of cardiac failure in subjects taking dutasteride was 0.6% (26/4,105) compared with 0.4% (15/4,126) in subjects on placebo alone. Therefore, the incidence of cardiac failure in dutasteride-treated men is not significantly higher than in placebo-treated men. The clinical significance of the numerical imbalance in cardiac failure is unknown. No causal relationship between dutasteride alone or coadministered with tamsulosin and cardiac failure has been established. No imbalance was observed in the incidence of overall cardiovascular adverse events in either trial.

Additional information regarding adverse reactions in placebo-controlled trials with dutasteride or tamsulosin monotherapy follows.

Dutasteride

Long-Term Treatment (Up to 4 Years): High-Grade Prostate Cancer. The REDUCE trial was a randomized, double-blind, placebo-controlled trial that enrolled 8,231 men aged 50 to 75 years with a serum PSA of 2.5 ng/mL and a negative prostate biopsy within the previous 6 months. Subjects were randomized to receive placebo (n = 4,120) or 0.5 mg daily doses of dutasteride (n = 4,110) for up to 4 years. The mean age was 63 years and 91% were white. Subjects underwent protocol-mandated scheduled prostate biopsies at 2 and 4 years of treatment or had "for-cause biopsies" at non-scheduled times if clinically indicated. There was a higher incidence of Gleason score 8 or greater in men receiving dutasteride (1.0%) compared with men on placebo (0.5%) (See **Indications and Usage (1.2)**).

Warnings and Precautions (6.1). In a 7-year placebo-controlled clinical trial with another 5- α -reductase inhibitor (finasteride 5 mg, PROCAR®), similar results for Gleason score 8 to 10 prostate cancer were observed (finasteride 1.8% versus placebo 1.1%).

No clinical benefit has been demonstrated in patients with prostate cancer treated with dutasteride.

Reproductive and Breast Disorders

In the 3 pivotal placebo-controlled BPH trials with dutasteride, each 4 years in duration, there was no evidence of increased sexual adverse reactions (impotence, decreased libido, and ejaculation disorder) or breast disorders with increased duration of treatment. Among these 3 trials, there was 1 case of breast cancer in the dutasteride group and 1 case in the placebo group. No cases of breast cancer were reported in any treatment group in the 4-year CombAt trial or the 4-year REDUCE trial.

The relationship between long-term use of dutasteride and male breast neoplasia is currently unknown.

Tamsulosin

According to the tamsulosin prescribing information, in two 13-week treatment trials with tamsulosin monotherapy, adverse reactions occurring in at least 2% of subjects receiving 0.4 mg tamsulosin hydrochloride and at an incidence higher than in subjects receiving placebo were: infection, asthma, back pain, chest pain, somnolence, incontinence, rhinitis, pharyngitis, cough increased, sinusitis, and diarrhea.

Signs and Symptoms of Orthostasis. According to the tamsulosin prescribing information, in clinical trials with tamsulosin monotherapy, a positive orthostatic test result was observed in 11% (8/150) of subjects receiving 0.4 mg tamsulosin hydrochloride versus 11% (5/44) of subjects receiving placebo. Because orthostasis was detected more frequently in the tamsulosin-treated subjects than in placebo recipients, there is a potential risk of syncope (See **Warnings and Precautions (6.1)**).

6.2 Postmarketing Experience

The following adverse reactions have been identified during postapproval use of the individual components of dutasteride and tamsulosin hydrochloride capsules. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure. These reactions have been chosen for inclusion due to combination of their seriousness, frequency of reporting, or potential causal connection to drug exposure.

Dutasteride

Immune System Disorders: Hypersensitivity reactions, including rash, pruritus, urticaria, localized edema, serious skin reactions, and angioedema.

Females—Risk to Male Fetus:

Psychiatric Disorders: Depressed mood.

Reproductive System and Breast Disorders: Testicular pain and testicular swelling.

Tamsulosin

Immune System Disorders: Hypersensitivity reactions, including rash, urticaria, pruritus, angioedema, and respiratory problems have been reported with positive rechallenge in some cases.

Cardiac Disorders: Palpitations, dyspnea, atrial fibrillation, arrhythmia, and tachycardia.

Skin Disorders: Skin desquamation, including Stevens-Johnson syndrome, erythema multiforme, dermatitis exfoliative.

Gastrointestinal Disorders: Constipation, vomiting, dry mouth.

Reproductive System and Breast Disorders: Priapism.

Respiratory: Epistaxis.

Vascular Disorders: Hypotension.

Ophthalmologic Disorders: Blurred vision, visual impairment. During cataract and glaucoma surgery, a variant of small pupil syndrome known as Intraoperative Floppy Iris Syndrome (IFIS) associated with alpha-adrenergic-antagonist therapy (See **Warnings and Precautions (5.9)**).

7 DRUG INTERACTIONS

There have been no drug interaction trials using dutasteride and tamsulosin hydrochloride capsules. The following sections reflect information available for the individual components.

7.1 Cytochrome P450 Inhibition

Dutasteride

Dutasteride is extensively metabolized in humans by the CYP3A4 and CYP2C8 isoenzymes. The effect of potent CYP3A4 inhibitors on dutasteride has not been studied. Because of the potential for drug-drug interactions, use caution when prescribing a dutasteride-containing product, including dutasteride and tamsulosin hydrochloride capsules, to patients taking potent, chronic CYP3A4 enzyme inhibitors (e.g., ritonavir) (See **Clinical Pharmacology (12.3)**).

Tamsulosin

Strong and Moderate Inhibitors of CYP3A4 or CYP2D6. Tamsulosin is extensively metabolized, mainly by CYP3A4 or CYP2D6. Concomitant treatment with ketoconazole (a strong inhibitor of CYP3A4) resulted in increases in the C_{max} and area under the concentration-time curve (AUC) of tamsulosin by factors of 2.2 and 2.8, respectively. Concomitant treatment with paroxetine (a strong inhibitor of CYP2D6) resulted in increases in the C_{max} and AUC of tamsulosin by factors of 1.3 and 1.6, respectively. A similar increase in exposure is expected in poor metabolizers (PM) of CYP2D6 as compared to extensive metabolizers (EM). Since CYP2D6 PMs cannot be readily identified and the potential for increased increase in tamsulosin exposure exists when tamsulosin 0.4 mg is coadministered with strong CYP3A4 inhibitors in CYP2D6 PMs, tamsulosin 0.4 mg capsules should not be used in combination with strong inhibitors of CYP3A4 (e.g., ketoconazole). The effects of coadministration of both a CYP3A4 and a CYP2D6 inhibitor with tamsulosin have not been evaluated. However, there is a potential for significant increase in tamsulosin exposure when tamsulosin 0.4 mg is coadministered with a combination of both CYP3A4 and CYP2D6 inhibitors (See **Warnings and Precautions (5.2)**, **Clinical Pharmacology (12.3)**).

Cimetidine. Treatment with cimetidine resulted in a moderate increase in tamsulosin hydrochloride AUC (44%) (See **Warnings and Precautions (5.2)**, **Clinical Pharmacology (12.3)**).

7.2 Warfarin

Concomitant administration of dutasteride 0.5 mg/day for 3 weeks with warfarin does not alter the steady-state pharmacokinetics of the S- or R-warfarin isomers or alter the effect of warfarin on prothrombin time (See **Clinical Pharmacology (12.3)**).

Tamsulosin

A definitive drug-drug interaction trial between tamsulosin hydrochloride and warfarin was not conducted. Results from limited *in vitro* and *in vivo* studies are inconclusive. Caution should be exercised with concomitant administration of warfarin and tamsulosin-containing products, including dutasteride and tamsulosin hydrochloride capsules (See **Warnings and Precautions (5.2)**, **Clinical Pharmacology (12.3)**).

• **A painful erection that will not go away.** Rarely, dutasteride and tamsulosin hydrochloride capsules can cause a painful erection (priapism), which cannot be relieved by having sex. If this happens, get medical help right away. If priapism is not treated, there could be lasting damage to your penis, including not being able to have an erection.

The most common side effects of dutasteride and tamsulosin hydrochloride capsules include:

- ejaculation problems*
- trouble getting or keeping an erection (impotence)*
- a decrease in sex drive (libido)*
- dizziness
- enlarged or painful breasts. If you notice breast lumps or nipple discharge, you should talk to your healthcare provider.
- runny nose

*Some of these events may continue after you stop taking dutasteride and tamsulosin hydrochloride capsules.

Depressed mood has been reported in patients receiving dutasteride, an ingredient of dutasteride and tamsulosin hydrochloride capsules.

Dutasteride, an ingredient of dutasteride and tamsulosin hydrochloride capsules, has been shown to reduce sperm count, semen volume, and sperm movement. However, the effect of dutasteride and tamsulosin hydrochloride capsules on male fertility is not known.

Prostate-Specific Antigen (PSA) Test: Your healthcare provider may check you for other prostate problems, including prostate cancer before you start and while you take dutasteride and tamsulosin hydrochloride capsules. A blood test called PSA (prostate-specific antigen) is sometimes used to see if you might have prostate cancer. Dutasteride and tamsulosin hydrochloride capsules will reduce the amount of PSA measured in your blood. Your healthcare provider is aware of this effect and can still use PSA to see if you might have prostate cancer. Increases in your PSA levels while on treatment with dutasteride and tamsulosin hydrochloride capsules (even if the PSA levels are in the normal range) should be evaluated by your healthcare provider. These are not all the possible side effects with dutasteride and tamsulosin hydrochloride capsules. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

How should I store dutasteride and tamsulosin hydrochloride capsules?

- Store dutasteride and tamsulosin hydrochloride capsules at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature].
- Dutasteride and tamsulosin hydrochloride capsules may become deformed and/or discolored if kept at high temperatures.
- Do not use or touch dutasteride and tamsulosin hydrochloride capsules if your capsules are deformed, discolored, or leaking.
- Safely throw away medicine that is no longer needed.

Keep dutasteride and tamsulosin hydrochloride capsules and all medicines out of the reach of children.

General information about the safe and effective use of dutasteride and tamsulosin hydrochloride capsules.

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information Leaflet. Do not use dutasteride and tamsulosin hydrochloride capsules for a condition for which it was not prescribed. Do not give dutasteride and tamsulosin hydrochloride capsules to other people, even if they have the same symptoms that you have. It may harm them.

You can ask your healthcare provider or pharmacist for information about dutasteride and tamsulosin hydrochloride capsules that is written for health professionals.

For more information, call 1-800-828-9393.

What are the ingredients in dutasteride and tamsulosin hydrochloride capsules?

Active ingredients: dutasteride and tamsulosin hydrochloride

Inactive ingredients: butylated hydroxytoluene, ethylcellulose, gelatin, glycerin, lecithin, medium chain triglycerides, methacrylic acid copolymer, mono- and di-glycerides of capryl/capric acid, polyethylene glycol, sugar spheres, talc, triethyl citrate, iron oxide yellow, hypromellose, titanium dioxide, D&C yellow #10, iron oxide black, FD&C blue #2, FD&C blue #1, propylene glycol, FD&C red #40, shellac, polyvinyl acetate phthalate, macrogol, ammonium hydroxide.

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For Patient Information Leaflet, please visit www.parpfarm.com.

Manufactured by:
Par Pharmaceutical
 Chestnut Ridge, NY 10977

R03/2022 OS280A-01-1-05

Effect of Food: Food does not affect the pharmacokinetics of dutasteride following administration of dutasteride and tamsulosin hydrochloride capsules. However, a mean 30% decrease in tamsulosin C_{max} was observed when dutasteride and tamsulosin hydrochloride capsules was administered with food, similar to that seen when tamsulosin monotherapy was administered under fed versus fasting conditions.

Distribution: Dutasteride Pharmacokinetic data following single and repeat oral doses show that dutasteride has a large volume of distribution (300 to 500 L). Dutasteride is highly bound to plasma albumin (99.0%) and 1- α -dihydrocypotene (AAG, 96.6%).

In a trial of healthy subjects (n = 26) receiving dutasteride 0.5 mg/day for 12 months, semen dutasteride concentrations averaged 3.4 ng/mL (range: 0.4 to 14 ng/mL), at 12 months and, similar to serum, achieved steady-state concentrations at 6 months. On average, at 12 months 11.5% of serum dutasteride concentrations partitioned into semen.

Tamsulosin: The mean steady-state apparent volume of distribution of tamsulosin after intravenous administration to 10 healthy male adults was 16 L, which is suggestive of distribution into extracellular fluids and less than 20% of the body. Tamsulosin is extensively bound to human plasma proteins (94% to 99%), primarily AAG, with linear binding over a wide concentration range (20 to 600 ng/mL). The results of 2-way *in vitro* studies indicate that the binding of tamsulosin to human plasma proteins is not affected by amphotrilpyr, diclofenac, glyburide, simvastatin plus simvastatin-hydroxy acid metabolite, warfarin, diazepam, or propranolol. Likewise, tamsulosin had no effect on the extent of binding of these drugs.

Metabolism:

Dutasteride: Dutasteride is extensively metabolized in humans. *In vitro* studies showed that dutasteride is metabolized by the CYP3A4 and CYP3A5 isoenzymes. Both of these isoenzymes produced the 4- α -hydroxydutasteride, 6- α -hydroxydutasteride, and the 6,4- α -dihydroxydutasteride metabolites. In addition, the 15- α -hydroxydutasteride metabolite was formed by CYP3A4. Dutasteride is not metabolized *in vivo* by human cytochrome P450 isoenzymes CYP1A2, CYP2A6, CYP2C9, CYP2C19, CYP2E1, CYP2R2, CYP2R1, CYP2R1, and CYP2E1. In human serum following dosing to steady state, unchanged dutasteride, 3 major metabolites (4- α -hydroxydutasteride, 1,2-dihydroxydutasteride, and 6- α -hydroxydutasteride), and 2 minor metabolites (6,4- α -dihydroxydutasteride and 15-hydroxydutasteride), as assessed by mass spectrometric response, have been detected. The absolute stereochemistry of the hydroxy adducts in the 6 and 15 positions is not known. *In vivo*, the 4- α -hydroxydutasteride and 1,2-dihydroxydutasteride metabolites are much less potent than dutasteride against both isoforms of human 5- α -reductase. The activity of 6- α -hydroxydutasteride is comparable to that of dutasteride.

Tamsulosin: There is no enantiomeric bioconversion from tamsulosin (R)- to the S(-) isomer in humans. Tamsulosin is extensively metabolized by cytochrome P450 enzymes in the liver and 60% of the dose is excreted in urine unchanged. However, the pharmacologic profile of the metabolites in humans has not been established. *In vitro* studies indicate that CYP3A4 and CYP2D6 are involved in metabolism of tamsulosin as well as some minor participation of other CYP isoenzymes. Inhibition of hepatic drug metabolizing enzymes may lead to increased exposure to tamsulosin. See **Drug Interactions (7.1)**. The metabolites of tamsulosin undergo extensive conjugation to glucuronide or sulfate prior to renal excretion.

Incubations with human liver microsomes showed no evidence of clinically significant metabolic interactions between tamsulosin and amphotrilpyr, albuterol, glyburide, and finasteride. However, results of the *in vitro* testing of the tamsulosin interaction with diclofenac and warfarin were equivocal.

Excretion:

Dutasteride: Dutasteride and its metabolites were excreted mainly in feces. As a percent of dose, there was approximately 5% unchanged dutasteride (approximately 1% to approximately 15%) and 40% of dutasteride-related metabolites (approximately 2% to approximately 90%). Only trace amounts of unchanged dutasteride were found in urine (<1%). Therefore, on average, the dose unaccounted for approximately 55% (range 5% to 97%). The terminal elimination half-life of dutasteride is approximately 3 weeks at steady state. The average steady-state serum dutasteride concentration was 40 ng/mL following 0.5 mg/day for 1 year. Following daily dosing, dutasteride serum concentrations achieve 65% of steady-state concentration after 1 month and approximately 90% after 3 months. Due to the long half-life of dutasteride, serum concentrations remain detectable (greater than 0.1 ng/mL) for up to 4 to 6 months after discontinuation of treatment.

Tamsulosin: On administration of the radiolabeled dose of tamsulosin to 4 healthy volunteers, 97% of the administered radioactivity was recovered, with urine (76%) representing the primary route of excretion compared with feces (21%) over 168 hours.

Following intravenous or oral administration of an immediate-release formulation, the elimination half-life of tamsulosin in plasma ranges from 5 to 7 hours. Because of absorption rate-controlled pharmacokinetics with tamsulosin hydrochloride capsules, the apparent half-life of tamsulosin is approximately 9 to 13 hours in healthy volunteers and 14 to 19 hours in elderly or target population.

Tamsulosin undergoes restrictive clearance in humans, with a relatively low systemic clearance (2.88 L/h).

Specific Populations:

Pediatric Patients: The pharmacokinetics of dutasteride and tamsulosin administered together have not been investigated in subjects younger than 18 years.

Geriatric Patients: Dutasteride and tamsulosin pharmacokinetics using dutasteride and tamsulosin hydrochloride capsules have not been studied in geriatric patients. The following text reflects information for the individual components.

Dutasteride: No dosage adjustment is necessary in the elderly. The pharmacokinetics and pharmacodynamics of dutasteride were evaluated in 36 healthy male subjects aged between 18 and 75 years. The pharmacokinetics of dutasteride administered orally contained in this single-dose trial, dutasteride half-life increased with age (approximately 170 hours in men aged 20 to 49 years, approximately 260 hours in men aged 50 to 69 years, and approximately 300 hours in men older than 70 years).

Tamsulosin: Cross-study comparison of tamsulosin overall exposure (AUC) and half-life indicate that the pharmacokinetic disposition of tamsulosin may be slightly prolonged in geriatric males compared with young, healthy male volunteers. Intrinsic clearance is independent of age, resulting in similar t_{1/2} to AAG, but diminishes with age, resulting in a 40% overall higher exposure (C_{max}) in subjects aged 55 to 75 years compared with subjects aged 20 to 32 years.

Male and Female Patients: Dutasteride: Dutasteride is contraindicated in females who are pregnant and is not indicated for use in females [see **CONTRAINDICATIONS (4)**, **Warnings and Precautions (5.6)**]. The pharmacokinetics of dutasteride in females have not been studied.

Tamsulosin: Tamsulosin is not indicated for use in females. No information is available on the pharmacokinetics of tamsulosin in females.

Racial and Ethnic Groups: The effect of race on the pharmacokinetics of dutasteride and tamsulosin administered together or separately has not been studied.

Patients with Renal Impairment: The effect of renal impairment on dutasteride and tamsulosin pharmacokinetics has not been studied using dutasteride and tamsulosin hydrochloride capsules. The following text reflects information for the individual components.

Dutasteride: The effect of renal impairment on dutasteride pharmacokinetics has not been studied. However, less than 0.1% of a steady-state 0.5 mg dose of dutasteride is recovered in human urine, so no adjustment in dosage is anticipated in patients with renal impairment.

Tamsulosin: The pharmacokinetics of tamsulosin have been compared in 8 subjects with mild-moderate kidney disease (30s CL_{cr} <70 mL/min/1.73 m²) or moderate-to-severe (10s CL_{cr} <30 mL/min/1.73 m²) renal impairment and 6 normal subjects (CL_{cr} >90 mL/min/1.73 m²). While a change in the overall plasma concentration of tamsulosin was observed as the result of altered binding to AAG, the unbound (active) concentration of tamsulosin was not changed significantly with only a modest (32%) change in intrinsic clearance of unbound tamsulosin. Therefore, patients with moderate-to-severe kidney impairment do not require an adjustment in tamsulosin dose. Tamsulosin has not been studied in patients with severe hepatic impairment.

Drug Interaction Studies:

There have been no drug interaction studies using dutasteride and tamsulosin hydrochloride capsules. The following text reflects information available for the individual components.

Cytochrome P450 Inhibitors: Dutasteride: No clinical drug interaction trials have been performed to evaluate the impact of CYP3A enzyme inhibitors on dutasteride pharmacokinetics. However, based on *in vitro* data, blood concentrations of dutasteride may increase in the presence of inhibitors of CYP3A4/5 such as ritonavir, ketconazole, verapamil, diltiazem, cimetidine, trovateandomycin, and ciprofloxacin. Dutasteride does not inhibit the *in vitro* metabolism of model substrates for the major human cytochrome P450 isoenzymes CYP1A2, CYP2C9, CYP2C19, CYP2D6, and CYP3A4) at a concentration of 1,000 ng/mL, 25 times greater than steady-state serum concentrations in humans.

Tamsulosin: Strong and Moderate Inhibitors of CYP3A4 or CYP2D6: The effects of ketoconazole (a strong inhibitor of CYP3A4) at 400 mg once daily for 5 days on the pharmacokinetics of a single tamsulosin hydrochloride capsule 0.4 mg dose was investigated in 24 healthy volunteers (age range: 23 to 47 years). Concomitant treatment with ketoconazole resulted in increases in the C_{max} and AUC of tamsulosin by factors of 2.2 and 2.3, respectively. The effects of verapamil (a moderate inhibitor of CYP3A4) at a concentration of 150 mg once daily for 7 days on the pharmacokinetics of tamsulosin have not been evaluated.

The effects of paroxetine (a strong inhibitor of CYP2D6) at 20 mg once daily for 9 days on the pharmacokinetics of a single tamsulosin capsule 0.4 mg dose was investigated in 24 healthy volunteers (age range: 23 to 47 years). Concomitant treatment with paroxetine resulted in increases in the C_{max} and AUC of tamsulosin by factors of 1.3 and 1.6, respectively. A similar increase in exposure is expected in poor metabolizers (PM) of CYP2D6 compared with extensive metabolizers (EM). A fraction of population (about 7% of Caucasians and 2% of African-Americans) are CYP2D6 PMs. Since CYP2D6 PMs cannot be readily identified and the potential for significant increase in tamsulosin exposure exists when tamsulosin 0.4 mg is coadministered with strong CYP3A4 inhibitors in CYP2D6 PMs, tamsulosin 0.4 mg capsules should not be used in combination with strong inhibitors of CYP3A4 or CYP2D6.

The effects of concomitant administration of a moderate CYP2D6 inhibitor (e.g., terbinafine) on the pharmacokinetics of tamsulosin have not been evaluated.

The effects of coadministration of both a CYP3A4 and a CYP2D6 inhibitor with tamsulosin capsules have not been evaluated. However, there is a potential for significant increase in tamsulosin exposure when tamsulosin 0.4 mg is coadministered with a combination of both CYP3A4 and CYP2D6 inhibitors.

Cimetidine: The effects of cimetidine at the highest recommended dose (400 mg every 6 hours for 6 days) on the pharmacokinetics of a single tamsulosin capsule 0.4 mg dose was investigated in 10 healthy volunteers (age range: 21 to 38 years). Treatment with cimetidine resulted in a significant decrease (26%) in the clearance of tamsulosin hydrochloride, which resulted in a moderate increase in tamsulosin hydrochloride AUC (44%).

Alpha-adrenergic Antagonists: Dutasteride: In a single-sequence, crossover trial in healthy volunteers, the administration of tamsulosin or terazosin in combination with dutasteride had no effect on the steady-state pharmacokinetics of either alpha-adrenergic antagonist. Although the effect of administration of tamsulosin or terazosin on dutasteride pharmacokinetic parameters was not evaluated, the percent change in DHT concentrations was similar for dutasteride, alone or in combination with tamsulosin or terazosin.

Warfarin: Dutasteride: In a trial of 23 healthy volunteers, 3 weeks of treatment with dutasteride 0.5 mg/day did not alter the steady-state pharmacokinetics of the S- or R-warfarin isomers or alter the effect of warfarin on prothrombin time when administered with warfarin.

Tamsulosin: A definitive drug-drug interaction trial between tamsulosin and warfarin was not conducted. Results from limited *in vitro* and *in vivo* studies are inconclusive. Therefore, caution should be exercised with concomitant administration of warfarin and tamsulosin.

Nifedipine, Atenolol, Enalapril: Tamsulosin: In 3 trials in hypertensive subjects (age range: 47 to 79 years) whose blood pressure was controlled with stable doses of nifedipine extended-release, atenolol, or enalapril for at least 3 months, tamsulosin hydrochloride capsules 0.4 mg for 7 days followed by tamsulosin hydrochloride capsules 0.8 mg for another 7 days (n = 8 per trial) resulted in no clinically significant effects on blood pressure and pulse rate compared with placebo (n = 4 per trial). Therefore, dosage adjustments are not necessary when tamsulosin is administered concomitantly with nifedipine extended-release, atenolol, or enalapril.

Digoxin and Theophylline: Dutasteride: In a trial of 20 healthy volunteers, dutasteride did not alter the steady-state pharmacokinetics of digoxin when administered concomitantly at a dose of 0.5 mg/day for 3 weeks.

Tamsulosin: In 2 trials in healthy volunteers (n = 10 per trial; age range: 19 to 39 years) receiving tamsulosin capsules 0.4 mg/day for 2 days, followed by tamsulosin capsules 0.8 mg/day for 5 to 8 days, single intravenous doses of digoxin 0.5 mg or theophylline 5 mg/kg resulted in no change in the pharmacokinetics of digoxin or theophylline. Therefore, dosage adjustments are not necessary when a tamsulosin capsule is administered concomitantly with digoxin or theophylline.

Furosemide: Tamsulosin: The pharmacokinetic and pharmacodynamic interaction between tamsulosin hydrochloride capsules 0.8 mg/day (steady-state) and furosemide 20 mg intravenously (single dose) was evaluated in 10 healthy volunteers (age range: 21 to 40 years). Tamsulosin had no effect on the pharmacokinetics (excretion of electrolytes) of furosemide. While furosemide produced an 11% to 12% reduction in tamsulosin C_{max} and AUC, these changes are expected to be clinically insignificant and do not require dose adjustment for tamsulosin.

Calcium Channel Antagonists: Dutasteride: In a population pharmacokinetics analysis, a decrease in clearance of dutasteride was noted when coadministered with the CYP3A4 inhibitors verapamil (37%, n = 6) and diltiazem (44%, n = 5). In contrast, no decrease in clearance was seen when amlodipine, another calcium channel antagonist that is not a CYP3A4 inhibitor, was coadministered with dutasteride (+7%, n = 4). The decrease in clearance and subsequent increase in exposure to dutasteride in the presence of verapamil and diltiazem is not considered to be clinically significant. No dosage adjustment is recommended.

Cholestyramine: Dutasteride: Administration of a single 5 mg dose of dutasteride followed 1 hour later by 12 g cholestyramine did not affect the relative bioavailability of dutasteride in 12 normal volunteers.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility
No non-clinical studies have been conducted with dutasteride and tamsulosin hydrochloride capsules. The following information is based on studies performed with dutasteride or tamsulosin.

Carcinogenesis

Dutasteride: A 2-year carcinogenicity study was conducted in B6C3F₁ mice at doses of 3, 35, 250, and 500 mg/kg/day for males and 3, 35, and 250 mg/kg/day for females; an increased incidence of benign hepatocellular adenomas was noted at 250 mg/kg/day (290-fold the MRHD of a 0.5 mg daily dose) in female mice only. Two of the 3 major human metabolites have been detected in mice. The exposure to these metabolites in mice is either lower than in humans or is not known.

In a 2-year carcinogenicity study in Han Wistar rats, at doses of 1.5, 7.5, and 53 mg/kg/day in males and 0.8, 6.3, and 15 mg/kg/day in females, there was an increase in Leydig cell adenomas in the testes at 135-fold the MRHD (53 mg/kg/day and greater). An increased incidence of Leydig cell hyperplasia was present at 52-fold the MRHD (male rat doses of 7.5 mg/kg/day and greater). A positive correlation between proliferative changes in the Leydig cells and an increase in circulating luteinizing hormone levels has been demonstrated with 5- α -reductase inhibitors and is consistent with an effect on the hypothalamic-pituitary-testicular axis following 5- α -reductase

inhibition. At tamsulosin doses, luteinizing hormone levels in rats were increased by 167%. In this study, the major human metabolites were tested for carcinogenicity at approximately 1 to 3 times the expected clinical exposure.

Tamsulosin: In a rat carcinogenicity assay, no increases in tumor incidence was observed in rats administered up to 3 times the MRHD of 0.8 mg/day (based on AUC of animal doses up to 4.3 mg/kg/day in males and up to 52 mg/kg/day in females), with the exception of a modest increase in the frequency of mammary gland fibroadenomas in female rats receiving doses of 5.4 mg/kg or greater.

In a carcinogenicity assay, mice were administered up to 8 times the MRHD of tamsulosin (oral doses up to 127 mg/kg/day in males and 153 mg/kg/day in females). There was no significant tumor findings in male mice. Female mice treated for 2 years with the 2 highest doses of 45 and 158 mg/kg/day had statistically significant increases in the incidence of mammary gland fibroadenomas (P<0.0001) and adenocarcinomas.

The increased incidences of mammary gland neoplasms in female rats and mice were considered secondary to tamsulosin-induced hyperplasia of the mammary gland epithelial cells and increased prolactin in humans. The relevance for human risk of the findings of prostatic-mediated endocrine tumors in rodents is not known.

Mutagenesis

Dutasteride: Dutasteride was tested for genotoxicity in a bacterial mutagenesis assay (Ames test), a chromosomal aberration assay in Chinese hamster ovary (CHO) cells, and a micronucleus assay in rats. The results did not indicate any genotoxic potential of the parent drug. *In vivo* studies in mice did not indicate any genotoxic potential in either the Ames test or an abbreviated Ames test.

Tamsulosin: Tamsulosin produced no evidence of mutagenic potential *in vitro* in the Ames reverse mutation test, mouse lymphoma thymine kinase assay, unscheduled DNA repair synthesis assay, and chromosomal aberration assays in CHO cells and human lymphocytes. There were no mutagenic effects in the *in vivo* sister chromatid exchange and mouse micronucleus assay.

Impairment of Fertility

Studies of sexually mature male rats with dutasteride at 0.1 times the MRHD (animal doses of 0.05 mg/kg/day or greater for up to 31 weeks) based on mean sperm count resulted in dose- and time-dependent decreases in fertility at all doses; reduced cauda epididymal (absolute) sperm counts but not sperm concentration (at 50 and 500 mg/kg/day); reduced weights of the epididyma, prostate, and seminal vesicles; and microscopic changes and cytoplasmic changes of epithelium in the epididymis and/or decreased cytoplasmic content of epithelium, consistent with decreased secretory activity in the prostate and seminal vesicles) in the reproductive organs at all doses in the absence of paternal toxicity. The fertility effects were reversed by Recovery Week 6 at all dosages except the 500 mg/kg/day dose at the end of a 14-week recovery period. The microscopic changes were no longer present at Recovery Week 14 at 0.1 times the MRHD and were partly recovered in the remaining treatment groups. Low levels of dutasteride (0.6 to 1.7 mg/kg) were detected in the serum of untreated female rats mated to treated males (10 to 500 mg/kg/day) for 29 to 30 weeks) which are 16 to 110 times the MRHD based on mean serum concentration. No feminization occurred in males offspring of untreated female rats mated to treated male rats even though detectable blood levels of dutasteride were observed in the female rats.

In a fertility study in female rats with dosing 4 weeks prior to mating through early gestation, oral administration of dutasteride at doses of 0.05, 2.5, 12.5, and 30 mg/kg/day resulted in reduced litter size due to increased resorptions and in feminization of male fetuses (decreased anogenital distance) at 2 to 10 times the MRHD (animal doses of 1.25 mg/kg/day or greater) based on mean serum concentration, in the presence of maternal toxicity (decreased body weight gain). Fetal body weights were also reduced at approximately 0.02 times the MRHD (rat dose of 0.05 mg/kg/day or greater) based on mean serum concentration, with no no-effect level, in the absence of maternal toxicity.

Tamsulosin: Studies in rats revealed significantly reduced fertility in males dosed with single or multiple daily doses of 300 mg/kg/day of tamsulosin hydrochloride (AUC exposure in rats about 50 times the human exposure with the maximum therapeutic dose). The mechanism of dose-related fertility in male rats is considered to be an effect of the compound on the vaginal plug formation possibly due to changes of semen content or impairment of ejaculation. The effects on fertility were reversible, showing improvement by 3 days after a single treatment and 4 weeks after multiple daily dosing. Effects on fertility in males were completely reversed within 5 weeks after discontinuation of multiple daily dosing. Multiple doses of 10 and 100 mg/kg/day tamsulosin hydrochloride (1/5 and 16 times the anticipated human AUC exposure) did not significantly alter fertility in male rats. Effects of tamsulosin on sperm counts or sperm function have not been studied.

Studies in female rats revealed significant reductions in fertility after single or multiple daily doses of 300 mg/kg/day of the R-isomer or racemic mixture of tamsulosin hydrochloride, respectively. In female rats, the reductions in fertility after single doses were considered to be associated with impairments in fertilization. Multiple daily doses of 10 or 100 mg/kg/day of the racemic mixture did not significantly alter fertility in female rats.

13.2 Animal Toxicology and/or Pharmacology

Central Nervous System Toxicology Studies:

Dutasteride: In rats and dogs, repeated oral administration of dutasteride resulted in some animals showing signs of non-specific, reversible, centrally-mediated toxicity without associated histopathological changes at exposures 425- and 315-fold the expected clinical exposure of parent drug, respectively.

Rabbit Dermal Absorption:

In a rabbit dermal pharmacokinetics study, dermal absorption of dutasteride in CAPMUL (glyceryl oleate) in rabbits resulted in serum concentrations of 2.7 to 4.0 ng/mL for doses of 1 to 20 mg/mL, respectively, or 56% to 100% of applied dutasteride to be absorbed under occluded and prolonged contact conditions. Dermal absorption of tamsulosin hydrochloride capsules administered orally contained 0.5 mg dutasteride dissolved in a mixture of mono- α -glycerides of capryl/capric acid and butylated hydroxytoluene. Dutasteride in water was minimally absorbed in rabbits (2,000 mg/kg).

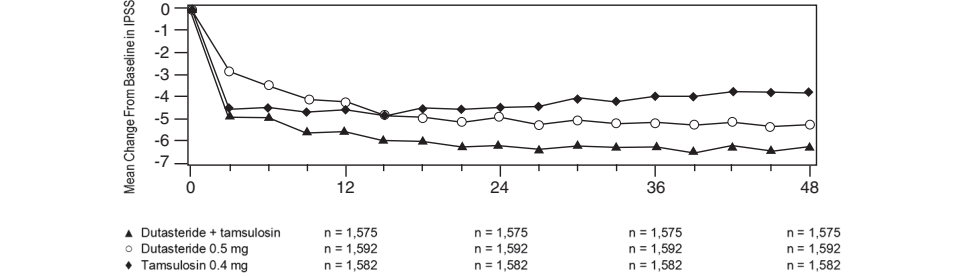
14 CLINICAL STUDIES

The trial supporting the efficacy of dutasteride and tamsulosin hydrochloride capsules was a 4-year multicenter, randomized, double-blind, parallel-group trial (COMBAT trial) investigating the efficacy of the coadministration of dutasteride 0.5 mg/day and tamsulosin hydrochloride capsules 0.4 mg/day compared with dutasteride alone (n = 1,623) or tamsulosin alone (n = 1,611). Subjects were aged at least 50 years with a serum PSA \geq 1.5 ng/mL and <10 ng/mL, and BPH diagnosed by medical history and physical examination, including enlarged prostate (>30 cc) and BPH symptoms that were moderate to severe according to the International Prostate Symptom Score (IPSS) of at least 8. The expected trial population was white. Approximately 62% of subjects had previous exposure to 5- α -reductase inhibitor or alpha-adrenergic antagonist treatment. Of the 4,844 subjects randomly assigned to receive treatment, 69% of subjects in the coadministration group, 67% in the dutasteride group, and 61% in the tamsulosin group completed 4 years of double-blind treatment.

Effect on Symptom Score

Symptoms were quantified using the first 7 questions of the International Prostate Symptom Score (IPSS). The baseline score was approximately 16.4 units for each treatment group. Coadministration therapy was statistically superior to each of the monotherapy treatments in reducing symptom scores at Month 24, the primary time point for this endpoint. At Month 24, the mean changes from baseline (sD) in IPSS total symptom scores were -6.2 (±7.14) for the coadministration group, -4.9 (±6.81) for dutasteride, and -4.3 (±7.01) for tamsulosin, with a mean difference between coadministration and dutasteride of -1.3 units (P<0.001; [95% CI: -1.69, -0.86]), and between coadministration and tamsulosin of -1.9 units (P<0.001; [95% CI: -2.25, -1.40]). A significant difference was seen by Month 9 and continued through Month 48. At Month 48 the mean changes from baseline (sD) in IPSS total symptom scores were -6.3 (±7.40) for coadministration, -5.3 (±7.14) for dutasteride, and -3.8 (±7.74) for tamsulosin, with a mean difference between coadministration and dutasteride of -0.9 units (P<0.001; [95% CI: -1.40, -0.50]), and between coadministration and tamsulosin of 2.5 units (P<0.001; [95% CI: -2.96, -2.07]). See Figure 1.

Figure 1. International Prostate Symptom Score Change from Baseline over a 48-Month Period (Randomized, Double-blind, Parallel-group Trial [COMBAT Trial])



Effect on Acute Urinary Retention (AUR) or the Need for BPH-Related Surgery

Analysis of treatment with coadministration therapy with dutasteride and tamsulosin did not provide benefit over dutasteride monotherapy in reducing the incidence of AUR or BPH-related surgery.

In separate 2-year randomized, double-blind trials, compared with placebo, dutasteride monotherapy was associated with a statistically significantly lower incidence of AUR (1.8% for dutasteride versus 4.2% for placebo; 57% reduction in risk) and with a statistically significantly lower incidence of BPH-related surgery (2.2% for dutasteride versus 4.1% for placebo; 48% reduction in risk).

Effect on Maximum Urine Flow Rate

The baseline Q_{max}