

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use DUTASTERIDE AND TAMSULOSIN HYDROCHLORIDE CAPSULES safely and effectively. See full prescribing information for DUTASTERIDE AND TAMSULOSIN HYDROCHLORIDE CAPSULES.

DUTASTERIDE AND TAMSULOSIN HYDROCHLORIDE capsules, for oral use

Initial U.S. Approval: 2010

INDICATIONS AND USAGE
Dutasteride and tamsulosin hydrochloride capsules are a combination of dutasteride, a 5-alpha-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)

ADVERSE REACTIONS—**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 and women of childbearing potential. (4, 5.6, 8.1)
- Pediatric patients. (4)

Warnings and Precautions

- Patients with previously demonstrated, clinically significant hypersensitivity (e.g., serious skin reactions, angioedema, urticarial, pruritus, respiratory symptoms) to dutasteride, other 5-alpha-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 situations where injury could result if syncope occurs. (6.1)
- **Do not use dutasteride and tamsulosin hydrochloride capsules with other alpha-adrenergic antagonists, such as 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 known inhibitors can 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)
- **Women who are pregnant or could become 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 clinical trials in subjects treated with coadministered dutasteride and tamsulosin are ejaculation disorders, impotence, decreased libido, dizziness, and breast disorders. (6.1)

Concomitant use of dutasteride and tamsulosin hydrochloride capsules may increase the risk of hypotension, orthostatic hypotension, and/or syncope, and increase the risk of orthostatic hypotension and/or syncope. (6.1)

In a 7-year placebo-controlled clinical trial with another 5-alpha-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.

ADVERSE REACTIONS
According to the tamsulosin prescribing information, in 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 that in subjects receiving placebo were: infection, asthma, back pain, chest pain, somnolence, insomnia, pharyngitis, rhinitis, dry mouth, increased sweating, sinusitis, and dizziness.

ADVERSE REACTIONS
In a 7-year placebo-controlled clinical trial with another 5-alpha-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%).

ADVERSE REACTIONS
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 16% (81/502) of subjects receiving 0.4 mg tamsulosin hydrochloride versus 11% (54/493) 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).

ADVERSE REACTIONS
2 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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7.1 Cytochrome P450 Inhibition

7.2 Warfarin
Concomitant treatment with ketoconazole (a strong inhibitor of CYP3A4) resulted in increased 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 to occur with other strong inhibitors of CYP3A4 (e.g., itraconazole) and CYP2D6 (e.g., fluoxetine).

7.3 Nifedipine, Atenolol, Enalapril
Concomitant administration of dutasteride and tamsulosin hydrochloride capsules to patients taking potent, chronic CYP3A4 enzyme inhibitors (e.g., itraconazole) was not 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).

7.4 Digoxin and Theophylline
Dutasteride does not alter the steady-state pharmacokinetics of digoxin when administered concomitantly at a dose of 0.5 mg/day for 3 weeks (see **Clinical Pharmacology** (12.3)).

7.5 Furosemide
Dutasteride has no effect on the pharmacokinetics (excretion of electrolytes) of furosemide. While furosemide produced an 11% to 12% reduction in tamsulosin hydrochloride C_{max} and AUC, these changes are expected to be clinically insignificant and do not require adjustment of the dose of tamsulosin (see **Clinical Pharmacology** (12.3)).

7.6 Calcium Channel Antagonists
Dutasteride does not alter the steady-state pharmacokinetics of diltiazem when administered concomitantly at a dose of 0.5 mg/day for 3 weeks (see **Clinical Pharmacology** (12.3)).

7.7 Cholestyramine
Dutasteride does not alter the steady-state pharmacokinetics of cholestyramine when administered concomitantly with dutasteride and tamsulosin hydrochloride capsules at a dose of 12 g (see **Clinical Pharmacology** (12.3)).

8 USE IN SPECIFIC POPULATIONS
8.1 Pregnancy
There are no adequate and well-controlled studies in pregnant women with dutasteride and tamsulosin hydrochloride capsules or its individual components.

8.2 Nursing Mothers
Dutasteride and tamsulosin hydrochloride capsules are contraindicated for use in women of childbearing potential and during pregnancy. Dutasteride is a 5-alpha-reductase inhibitor that prevents conversion of testosterone to dihydrotestosterone (DHT), a hormone necessary for normal development of male genitalia. In animal reproduction and developmental toxicity studies, dutasteride inhibited normal development of external genitalia in male fetuses. Therefore, dutasteride may cause fetal harm when administered to a pregnant woman. If dutasteride is used during pregnancy or if a woman becomes pregnant while taking dutasteride, the patient should be apprised of the potential hazard to the fetus.

8.3 Pediatric Use
Abnormalities in the genitalia of male fetuses are an expected physiological consequence of inhibition of the conversion of testosterone to DHT by 5-alpha-reductase inhibitors. These results are similar to observations in male infants with genetic 5-alpha-reductase deficiency. Therefore, dutasteride may cause fetal harm when administered to a pregnant woman. If dutasteride is used during pregnancy or if a woman becomes pregnant while taking dutasteride, the patient should be apprised of the potential hazard to the fetus.

8.4 Geriatric Use
In an embryo-fetal development study in male rats, oral administration of dutasteride at doses 10 times less than the maximum recommended human dose (MRHD) of 0.5 mg daily resulted in abnormalities of male genitalia in the fetus (decreased anogenital distance, decreased anogenital ratio, reduced body weight, decreased body weight gain, and reduced body weight at birth) in a dose-dependent manner. In a rabbit embryo-fetal study, doses 28- to 93-fold the MRHD (animal doses of 30, 100, and 200 mg/kg/day) were administered orally during the period of major organogenesis (gestation days 7 to 29) to encompass the late period of external genitalia development. Histological evaluation of the genital papilla of fetuses revealed evidence of feminization of the male fetuses at all doses. A second embryo-fetal study in rats confirmed the expected clinical exposure (animal doses of 0.05, 0.4, 3.0, and 30 mg/kg/day) also produced evidence of feminization of the genitalia in male fetuses at all doses.

8.5 Renal Impairment
In an oral pre- and post-natal development study in rats, dutasteride doses of 0.05, 2.5, 12.5, or 30 mg/kg/day were administered. Unrequited evidence of feminization of the genitalia (i.e., decreased anogenital distance, increased incidence of hypospadias, nipple development) of male offspring occurred at 14- to 90-fold the MRHD (animal doses of 0.05 to 30 mg/kg/day). At 0.05-fold the expected clinical exposure (animal dose of 0.05 mg/kg/day), evidence of feminization was limited to a small, but statistically significant, decrease in anogenital distance. Animal doses of 2.5 to 30 mg/kg/day resulted in prolonged gestation in the parental females and a decrease in time to vaginal patency for female offspring and a decrease in prostate and testis weights in male offspring. These findings were similar to those reported in an embryo-fetal development study in female rats, oral administration of dutasteride at doses 10 times less than the maximum recommended human dose (MRHD) of 0.5 mg daily resulted in abnormalities of male genitalia in the fetus (decreased anogenital distance, decreased anogenital ratio, reduced body weight, decreased body weight gain, and reduced body weight at birth) in a dose-dependent manner. In a rabbit embryo-fetal study, doses 28- to 93-fold the MRHD (animal doses of 30, 100, and 200 mg/kg/day) were administered orally during the period of major organogenesis (gestation days 7 to 29) to encompass the late period of external genitalia development. Histological evaluation of the genital papilla of fetuses revealed evidence of feminization of the male fetuses at all doses. A second embryo-fetal study in rats confirmed the expected clinical exposure (animal doses of 0.05, 0.4, 3.0, and 30 mg/kg/day) also produced evidence of feminization of the genitalia in male fetuses at all doses.

8.6 Hepatic Impairment
In an oral pre- and post-natal development study in rats, dutasteride doses of 0.05, 2.5, 12.5, or 30 mg/kg/day were administered. Unrequited evidence of feminization of the genitalia (i.e., decreased anogenital distance, increased incidence of hypospadias, nipple development) of male offspring occurred at 14- to 90-fold the MRHD (animal doses of 0.05 to 30 mg/kg/day). At 0.05-fold the expected clinical exposure (animal dose of 0.05 mg/kg/day), evidence of feminization was limited to a small, but statistically significant, decrease in anogenital distance. Animal doses of 2.5 to 30 mg/kg/day resulted in prolonged gestation in the parental females and a decrease in time to vaginal patency for female offspring and a decrease in prostate and testis weights in male offspring. These findings were similar to those reported in an embryo-fetal development study in female rats, oral administration of dutasteride at doses 10 times less than the maximum recommended human dose (MRHD) of 0.5 mg daily resulted in abnormalities of male genitalia in the fetus (decreased anogenital distance, decreased anogenital ratio, reduced body weight, decreased body weight gain, and reduced body weight at birth) in a dose-dependent manner. In a rabbit embryo-fetal study, doses 28- to 93-fold the MRHD (animal doses of 30, 100, and 200 mg/kg/day) were administered orally during the period of major organogenesis (gestation days 7 to 29) to encompass the late period of external genitalia development. Histological evaluation of the genital papilla of fetuses revealed evidence of feminization of the male fetuses at all doses. A second embryo-fetal study in rats confirmed the expected clinical exposure (animal doses of 0.05, 0.4, 3.0, and 30 mg/kg/day) also produced evidence of feminization of the genitalia in male fetuses at all doses.

8.7 Cholestyramine
Dutasteride does not alter the steady-state pharmacokinetics of cholestyramine when administered concomitantly with dutasteride and tamsulosin hydrochloride capsules at a dose of 12 g (see **Clinical Pharmacology** (12.3)).

8.8 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 in combination 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.

6.2 Postmarketing Experience
In a 7-year placebo-controlled clinical trial with another 5-alpha-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%).

6.3 Postmarketing Experience
In a 7-year placebo-controlled clinical trial with another 5-alpha-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%).

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6.17 Postmarketing Experience
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The clinical significance of the numerical imbalances 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.

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

Dutasteride
6.1 Postmarketing Experience
In a 7-year placebo-controlled clinical trial with another 5-alpha-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%).

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According to the tamsulosin prescribing information, in 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 that in subjects receiving placebo were: infection, asthma, back pain, chest pain, somnolence, insomnia, pharyngitis, rhinitis, dry mouth, increased sweating, sinusitis, and dizziness.

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ADVERSE REACTIONS
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 16% (81/502) of subjects receiving 0.4 mg tamsulosin hydrochloride versus 11% (54/493) 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).

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

7.1 Cytochrome P450 Inhibition
7.2 Warfarin
Concomitant treatment with ketoconazole (a strong inhibitor of CYP3A4) resulted in increased 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 to occur with other strong inhibitors of CYP3A4 (e.g., itraconazole) and CYP2D6 (e.g., fluoxetine).

7.3 Nifedipine, Atenolol, Enalapril
Concomitant administration of dutasteride and tamsulosin hydrochloride capsules to patients taking potent, chronic CYP3A4 enzyme inhibitors (e.g., itraconazole) was not 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).

7.4 Digoxin and Theophylline
Dutasteride does not alter the steady-state pharmacokinetics of digoxin when administered concomitantly at a dose of 0.5 mg/day for 3 weeks (see **Clinical Pharmacology** (12.3)).

7.5 Furosemide
Dutasteride has no effect on the pharmacokinetics (excretion of electrolytes) of furosemide. While furosemide produced an 11% to 12% reduction in tamsulosin hydrochloride C_{max} and AUC, these changes are expected to be clinically insignificant and do not require adjustment of the dose of tamsulosin (see **Clinical Pharmacology** (12.3)).

7.6 Calcium Channel Antagonists
Dutasteride does not alter the steady-state pharmacokinetics of diltiazem when administered concomitantly at a dose of 0.5 mg/day for 3 weeks (see **Clinical Pharmacology** (12.3)).

7.7 Cholestyramine
Dutasteride does not alter the steady-state pharmacokinetics of cholestyramine when administered concomitantly with dutasteride and tamsulosin hydrochloride capsules at a dose of 12 g (see **Clinical Pharmacology** (12.3)).

8 USE IN SPECIFIC POPULATIONS
8.1 Pregnancy
There are no adequate and well-controlled studies in pregnant women with dutasteride and tamsulosin hydrochloride capsules or its individual components.

8.2 Nursing Mothers
Dutasteride and tamsulosin hydrochloride capsules are contraindicated for use in women of childbearing potential and during pregnancy. Dutasteride is a 5-alpha-reductase inhibitor that prevents conversion of testosterone to dihydrotestosterone (DHT), a hormone necessary for normal development of male genitalia. In animal reproduction and developmental toxicity studies, dutasteride inhibited normal development of external genitalia in male fetuses. Therefore, dutasteride may cause fetal harm when administered to a pregnant woman. If dutasteride is used during pregnancy or if a woman becomes pregnant while taking dutasteride, the patient should be apprised of the potential hazard to the fetus.

8.3 Pediatric Use
Abnormalities in the genitalia of male fetuses are an expected physiological consequence of inhibition of the conversion of testosterone to DHT by 5-alpha-reductase inhibitors. These results are similar to observations in male infants with genetic 5-alpha-reductase deficiency. Therefore, dutasteride may cause fetal harm when administered to a pregnant woman. If dutasteride is used during pregnancy or if a woman becomes pregnant while taking dutasteride, the patient should be apprised of the potential hazard to the fetus.

8.4 Geriatric Use
In an embryo-fetal development study in male rats, oral administration of dutasteride at doses 10 times less than the maximum recommended human dose (MRHD) of 0.5 mg daily resulted in abnormalities of male genitalia in the fetus (decreased anogenital distance, decreased anogenital ratio, reduced body weight, decreased body weight gain, and reduced body weight at birth) in a dose-dependent manner. In a rabbit embryo-fetal study, doses 28- to 93-fold the MRHD (animal doses of 30, 100, and 200 mg/kg/day) were administered orally during the period of major organogenesis (gestation days 7 to 29) to encompass the late period of external genitalia development. Histological evaluation of the genital papilla of fetuses revealed evidence of feminization of the male fetuses at all doses. A second embryo-fetal study in rats confirmed the expected clinical exposure (animal doses of 0.05, 0.4, 3.0, and 30 mg/kg/day) also produced evidence of feminization of the genitalia in male fetuses at all doses.

8.5 Renal Impairment
In an oral pre- and post-natal development study in rats, dutasteride doses of 0.05, 2.5, 12.5, or 30 mg/kg/day were administered. Unrequited evidence of feminization of the genitalia (i.e., decreased anogenital distance, increased incidence of hypospadias, nipple development) of male offspring occurred at 14- to 90-fold the MRHD (animal doses of 0.05 to 30 mg/kg/day). At 0.05-fold the expected clinical exposure (animal dose of 0.05 mg/kg/day), evidence of feminization was limited to a small, but statistically significant, decrease in anogenital distance. Animal doses of 2.5 to 30 mg/kg/day resulted in prolonged gestation in the parental females and a decrease in time to vaginal patency for female offspring and a decrease in prostate and testis weights in male offspring. These findings were similar to those reported in an embryo-fetal development study in female rats, oral administration of dutasteride at doses 10 times less than the maximum recommended human dose (MRHD) of 0.5 mg daily resulted in abnormalities of male genitalia in the fetus (decreased anogenital distance, decreased anogenital ratio, reduced body weight, decreased body weight gain, and reduced body weight at birth) in a dose-dependent manner. In a rabbit embryo-fetal study, doses 28- to 93-fold the MRHD (animal doses of 30, 100, and 200 mg/kg/day) were administered orally during the period of major organogenesis (gestation days 7 to 29) to encompass the late period of external genitalia development. Histological evaluation of the genital papilla of fetuses revealed evidence of feminization of the male fetuses at all doses. A second embryo-fetal study in rats confirmed the expected clinical exposure (animal doses of 0.05, 0.4, 3.0, and 30 mg/kg/day) also produced evidence of feminization of the genitalia in male fetuses at all doses.

8.6 Hepatic Impairment
In an oral pre- and post-natal development study in rats, dutasteride doses of 0.05, 2.5, 12.5, or 30 mg/kg/day were administered. Unrequited evidence of feminization of the genitalia (i.e., decreased anogenital distance, increased incidence of hypospadias, nipple development) of male offspring occurred at 14- to 90-fold the MRHD (animal doses of 0.05 to 30 mg/kg/day). At 0.05-fold the expected clinical exposure (animal dose of 0.05 mg/kg/day), evidence of feminization was limited to a small, but statistically significant, decrease in anogenital distance. Animal doses of 2.5 to 30 mg/kg/day resulted in prolonged gestation in the parental females and a decrease in time to vaginal patency for female offspring and a decrease in prostate and testis weights in male offspring. These findings were similar to those reported in an embryo-fetal development study in female rats, oral administration of dutasteride at doses 10 times less than the maximum recommended human dose (MRHD) of 0.5 mg daily resulted in abnormalities of male genitalia in the fetus (decreased anogenital distance, decreased anogenital ratio, reduced body weight, decreased body weight gain, and reduced body weight at birth) in a dose-dependent manner. In a rabbit embryo-fetal study, doses 28- to 93-fold the MRHD (animal doses of 30, 100, and 200 mg/kg/day) were administered orally during the period of major organogenesis (gestation days 7 to 29) to encompass the late period of external genitalia development. Histological evaluation of the genital papilla of fetuses revealed evidence of feminization of the male fetuses at all doses. A second embryo-fetal study in rats confirmed the expected clinical exposure (animal doses of 0.05, 0.4, 3.0, and 30 mg/kg/day) also produced evidence of feminization of the genitalia in male fetuses at all doses.

8.7 Cholestyramine
Dutasteride does not alter the steady-state pharmacokinetics of cholestyramine when administered concomitantly with dutasteride and tamsulosin hydrochloride capsules at a dose of 12 g (see **Clinical Pharmacology** (12.3)).

8.8 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 in combination 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.

6.2 Postmarketing Experience
In a 7-year placebo-controlled clinical trial with another 5-alpha-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%).

6.3 Postmarketing Experience
In a 7-year placebo-controlled clinical trial with another 5-alpha-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%).

6.4 Postmarketing Experience
In a 7-year placebo-controlled clinical trial with another 5-alpha-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%).

glaucoma surgery, tell your surgeon if you take or have taken dutasteride and tamsulosin hydrochloride capsules.

- 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 capsuls 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.

Tell your healthcare provider if you have any side effect that bothers you or that does not go away.

These are not all the possible side effects with dutasteride and tamsulosin hydrochloride capsules. For more information, ask your healthcare provider or pharmacist.

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.

Medicines are sometimes prescribed for purposes other than those listed in a patient 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.

This patient information leaflet summarizes the most important information about dutasteride and tamsulosin hydrochloride capsules. If you would like more information, talk with your healthcare provider. You can ask your pharmacist or healthcare provider for information about dutasteride and tamsulosin hydrochloride capsules that is written for health professionals.

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.

How do dutasteride and tamsulosin hydrochloride capsules work?

Dutasteride and tamsulosin hydrochloride capsules contain 2 medications, dutasteride and tamsulosin. These 2 medications work in different ways to improve symptoms of BPH. Dutasteride shrinks the enlarged prostate and tamsulosin relaxes muscles in the prostate and neck of the bladder. These 2 medications, when used together, can improve symptoms of BPH better than either medication when used alone.

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

Manufactured by:
Par Pharmaceutical
Chestnut Ridge, NY 10977

R03/2020 OS280A-01-1-04

Metabolism:

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-hydroxydutasteride, 6-hydroxydutasteride, and the 6,4-dihydroxydutasteride metabolites. In addition, the 15-hydroxydutasteride metabolite was formed by CYP3A4. Dutasteride is not metabolized *in vitro* by human cytochromes P450 isoenzymes CYP2A6, CYP2B6, CYP2C8, CYP2C9, CYP2C19, CYP2D6, CYP2E1. In human serum following dosing to steady state, unchanged dutasteride, 3 major metabolites (4-hydroxydutasteride, 1,2-dihydrodutasteride, and 6-hydroxydutasteride), and 15 hydroxydutasteride (6-hydroxydutasteride and 15-hydroxydutasteride), as assessed by mass spectrometric response, have been detected. The absolute stereochemistry of the hydroxyl additions in the 6 and 15 positions is not known. *In vitro*, the 4-hydroxydutasteride and 1,2-dihydrodutasteride metabolites are much less potent than dutasteride against both isoforms of human 5-α-reductase.

Tamsulosin: There is no enantiomeric bioconversion from tamsulosin (R(-) isomer) to the (S(+)) isomer in humans. Tamsulosin is extensively metabolized by the cytochrome P450 enzymes in the liver and less than 10% of the dose is excreted in urine unchanged. However, the pharmacokinetic 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 several other CYP isoenzymes. The elimination half-life of tamsulosin 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 amitriptyline, albuterol, glyburide, and fentanyl. However, results of the *in vivo* testing of the tamsulosin interaction with ciclesonide 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% as 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 approximated 65% (range: 5% to 97%). The terminal elimination half-life of dutasteride is approximately 5 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 66% 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 1 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 15 hours in patients with moderate renal impairment.

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

Specific Populations

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

Geriatric: Dutasteride and tamsulosin pharmacokinetics using dutasteride and tamsulosin hydrochloride capsules have not been studied in geriatric patients. The following text reflects information for 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 24 and 87 years following administration of a single 5 mg dose of dutasteride. 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 aged 70 years or greater).

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 tamsulosin binding to AAG, but diminishes with age, resulting in a 40% overall higher exposure (AUC) in subjects aged 55 to 75 years compared with subjects aged 20 to 32 years.

Gender:

Dutasteride: Dutasteride is contraindicated in pregnancy and women of childbearing potential and is not indicated for use in other women [see **CONTRAINDICATIONS (4)**, **Warnings and Precautions (6.6)**]. The pharmacokinetics of dutasteride in women have not been studied.

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

Race: The effect of race on pharmacokinetics of dutasteride and tamsulosin administered together or separately has not been studied.

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 dose is anticipated for patients with renal impairment.

Tamsulosin: The pharmacokinetics of tamsulosin have been compared in 6 subjects with mild-moderate (30c CL_{cr} <70 mL/min/1.73 m²) or moderate-severe (10c CL_{cr} <30 mL/min/1.73 m²) renal impairment and 8 healthy controls. No change in the overall plasma concentration of tamsulosin was observed as the result of altered binding to AAG, the unbound (active) concentration of tamsulosin, as well as the intrinsic clearance, remained relatively constant. Therefore, patients with renal impairment do not require an adjustment in tamsulosin dosing. However, patients with end-stage renal disease (eCL_{cr} <10 mL/min/1.73 m²) have not been studied.

Hepatic Impairment: The effect of hepatic impairment on dutasteride and tamsulosin pharmacokinetics has not been studied using dutasteride and tamsulosin hydrochloride capsules. The following text reflects information available for the individual components.

Dutasteride: The effect of hepatic impairment on dutasteride pharmacokinetics has not been studied. Because dutasteride is extensively metabolized, exposure could be higher in hepatically impaired patients.

Tamsulosin: The pharmacokinetics of tamsulosin have been compared in 8 subjects with moderate hepatic impairment (Child-Pugh classification Grades A and B) and 8 normal subjects. 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 does not change significantly with only a moderate (32%) change in intrinsic clearance of unbound tamsulosin. Therefore, patients with moderate hepatic impairment do not require an adjustment in tamsulosin dosing. However, patients with end-stage renal disease (eCL_{cr} <10 mL/min/1.73 m²) have not been studied.

Drug Interactions

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 itraconazole, verapamil, diltiazem, cimetidine, troleandomycin, and grapefruit juice.

Dutasteride does not inhibit the *in vitro* metabolism of model substrates for the major human cytochrome P450 isoenzymes (CYP1A2, CYP2C9, CYP2D6, CYP2E1, CYP2C8, 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 73 years). Coadministration with ketoconazole (1,400 mg once daily for 5 days) at a concentration of 200 ng/mL by factors of 2.2 and 2.8, respectively. The effects of concomitant administration of a moderate CYP3A4 inhibitor (i.e., erythromycin) 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 in 24 healthy controls. 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 as compared with extensive metabolizers (EM). A fraction of the population (about 7% of whites 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 (e.g., ketoconazole).

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

The effects of concomitant 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 8 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 36 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 DRIT 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 0.4 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 pharmacodynamics (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 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 amlopidine, 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 and 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 (200-fold the MRHD at 0.5 mg/day 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-alpha-reductase inhibitors and is consistent with an effect on the hypothalamic-pituitary-testicular axis following 5-alpha-reductase inhibition. At tumorigenic 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 studies) up to 43 mg/kg/day in males and up to 52 mg/kg/day in females), with the exception of a moderate 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 158 mg/kg/day in females). There were 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 hyperproliferation. It is not known if tamsulosin elevates prolactin in humans. The relevance for human risk of the findings of prolactin-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. Two major human metabolites were also negative in either the Ames test or an abbreviated Ames test.

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

Impairment of Fertility

Dutasteride: Treatment of sexually mature male rats with dutasteride at 0.1 to 110-fold the MRHD (animal doses of 0.05, 10, 50, and 500 mg/kg/day for up to 31 weeks) resulted in dose- and time-dependent decreases in fertility; reduced cauda epididymal (absolute) sperm counts but not sperm concentration (at 50 and 500 mg/kg/day); reduced weights of the epididymis, prostate, and seminal vesicles; and microscopic changes in the male reproductive organs. The fertility effects were reversed by recovery week 8 at all doses, and sperm counts were normal at the end of a 14-week recovery period. The 5-alpha-reductase–related changes consisted of cytoplasmic vacuolation (reversible), decreased cytoplasmic secretion and decreased cytoplasmic content of epithelium, epithelial and fibrous secretion in the prostate and seminal vesicles. The microscopic changes were no longer present at recovery week 14 in the low-dose group and were partly recovered in the remaining treatment groups. Low levels of dutasteride (0.6 to 17 ng/mL) were detected in the serum of untreated male rats 1 month to 4 months after the last doses at 10, 50, or 500 mg/kg/day for 29 to 30 weeks.

In a fertility study in female rats, oral administration of dutasteride at doses of 0.05, 2.5, 12.5, and 30 mg/kg/day resulted in reduced litter size, increased embryo resorption and feminization of male fetuses (decreased anogenital distance) at 2- to 10-fold the MRHD (animal doses of 2.5 mg/kg/day or greater). Fetal body weights were also reduced at less than 0.02-fold the MRHD in rats (0.5 mg/kg/day).

Tamsulosin: Studies in rats revealed significantly reduced fertility in males at approximately 50 times the MRHD based on AUC (single or multiple daily doses of 300 mg/kg/day of tamsulosin hydrochloride). The mechanism of decreased fertility in male rats is considered to be an effect of the compound on the vaginal plug removal possibly due to changes of semen content or impairment of ejaculation. The effect on fertility were reversible showing improvement by 3 days after a single dose and 4 weeks after multiple dosing. Effects on fertility in males were completely reversed within few weeks of discontinuation of multiple dosing. Multiple doses of 0.2 and 16 times the MRHD (animal doses of 10 and 100 mg/kg/day tamsulosin hydrochloride) did not significantly alter fertility in male rats. Effects of tamsulosin on sperm counts or sperm function have not been evaluated.

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

Estimates of exposure multiples comparing animal studies with the MRHD for dutasteride are based on clinical serum concentration at steady-state.

Estimates of exposure multiples comparing animal studies with the MRHD for tamsulosin are based on AUC.

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, but not associated histopathological changes at exposures 425- and 315-fold the expected clinical exposure (parent drug), respectively.

14 CLINICAL STUDIES

The trial comparing 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 0.4 mg/day versus either dutasteride or tamsulosin alone (n = 623) or tamsulosin alone (n = 1,611). Subjects were at least 50 years of age with a serum PSA ≥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). Eighty-eight percent (88%) of the enrolled trial population was white. Approximately 52% of subjects had previous exposure to 5-alpha-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 18.4 units for each treatment group. Coadministration therapy was statistically superior to each of the monotherapy treatments in decreasing symptom count 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 (±6.61) 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, -0.88]), and between coadministration and tamsulosin of -1.8 units (p<0.001; [95% CI: -2.23, -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 -0.96 units (p<0.001; [95% CI: -1.40, -0.52]), and between coadministration and tamsulosin of -2.5 units (p<0.001; [95% CI: -2.96, -0.07]). 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 Alpha-Urinary Retention or the Need for BPH-Related Surgery

After 4 years of treatment with placebo or tamsulosin, coadministration therapy with dutasteride and tamsulosin did not provide benefit over dutasteride monotherapy in reducing the incidence of AJR 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 AJR (1.5% for dutasteride versus 4.2% for placebo, 57% reduction in risk) and with a statistically significantly lower incidence of BPH-related surgery (2.4% for dutasteride versus 4.1% for placebo, 46% reduction in risk).

Effect on Maximum Urine Flow Rate

The baseline Q_{max} was approximately 10.7 mL/sec for each treatment group. Coadministration therapy was statistically superior to each of the monotherapy treatments in increasing Q_{max}. At Month 24, the primary time point for this endpoint, the mean increases from baseline (±SD) in Q_{max} were 2.4 (±5.26) mL/sec for coadministration group, 1.9 (±5.10) mL/sec for dutasteride, and 0.9 (±4.57) mL/sec for tamsulosin, with a mean difference between coadministration and dutasteride of 0.5 mL/sec (P = 0.003; [95% CI: 0.17, 0.94]), and between coadministration and tamsulosin of 1.5 mL/sec (p<0.001; [95% CI: 1.19, 1.98]). This difference was seen by Month 6 and continued through Month 24. See Figure 2.

The additional improvement in Q_{max} of coadministration therapy over dutasteride monotherapy was no longer statistically significant at Month 48.

Figure 2. Q_{max} Change from Baseline over a 24-Month Period (Randomized, Double-blind, Parallel-group Trial [CombAT Trial])

Effect on Prostate Volume

The mean prostate volume at trial entry was approximately 55 cc. At Month 24, the primary time point for this endpoint, the mean percent changes from baseline (±SD) in prostate volume were -26.9% (±22.57) for coadministration therapy, -28