SUMMARY OF PRODUCT CHARACTERISTICS

Warning

Pregnancy:

Drugs that act on the renin-angiotensin system can cause injury and death to the developing fetus. Discontinue as soon as possible once pregnancy is detected.

1. NAME OF THE MEDICINAL PRODUCT

Co-Tabuvan® 80/12.5 mg film-coated tablets.

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each tablet contains 80mg valsartan and 12.5mg hydrochlorothiazide.

3. PHARMACEUTICAL FORM

Co-Tabuvan is Light pink colored capsule shaped film coated tablets engraved with "HK" on one side and plain on the other side.

4. Clinical particulars

4.1 Therapeutic indications

Treatment of essential hypertension in adults.

Co-Tabuvan fixed-dose combination is indicated in patients whose blood pressure is not adequately controlled on valsartan or hydrochlorothiazide monotherapy.

4.2 Posology and method of administration

Posology

The recommended dose of Co-Tabuvan 80/12.5mg or 160/12.5mg or 160/25mg is one film-coated tablet once daily. Dose titration with the individual components is recommended. In each case, up- titration of individual components to the next dose should be followed in order to reduce the risk of hypotension and other adverse events.

When clinically appropriate direct change from monotherapy to the fixed combination may be considered in patients whose blood pressure is not adequately controlled on valsartan or hydrochlorothiazide monotherapy, provided the recommended dose titration sequence for the individual components is followed.

The clinical response to Co-Tabuvan should be evaluated after initiating therapy and if blood pressure remains uncontrolled, the dose may be increased by increasing either one of the components to a maximum dose of Co-Tabuvan 320 mg/25 mg.

The antihypertensive effect is substantially present within 2 weeks.

In most patients, maximal effects are observed within 4 weeks. However, in some patients, 4-8 weeks treatment may be required. This should be taken into account during dose-titration.

Method of administration

Co-Tabuvan can be taken with or without food and should be administered with water.

Special populations

Renal impairment

No dose adjustment is required for patients with mild to moderate renal impairment (Glomerular Filtration Rate (GFR) ≥ 30 ml/min). Due to the hydrochlorothiazide component, Co-Tabuvan is contraindicated in patients with severe renal impairment (GFR < 30 mL/min) and anuria (see sections 4.3, 4.4 and 5.2).

Hepatic impairment

In patients with mild to moderate hepatic impairment without cholestasis the dose of valsartan should not exceed 80 mg (see section 4.4). No adjustment of the hydrochlorothiazide dose is required for patients with mild to moderate hepatic impairment. Due to the valsartan component, Co-Tabuvan is contraindicated in patients with severe hepatic impairment or with biliary cirrhosis and cholestasis (see sections 4.3, 4.4 and 5.2).

Elderly

No dose adjustment is required in elderly patients.

Paediatric patients

Co-Tabuvan is not recommended for use in children below the age of 18 years due to a lack of data on safety and efficacy.

4.3 Contraindications

- Hypersensitivity to valsartan, hydrochlorothiazide, other sulfonamide-derived medicinal products or to any of the excipients.

- Second and third trimester of pregnancy (section 4.4 and 4.6).
- Severe hepatic impairment, biliary cirrhosis and cholestasis.
- Severe renal impairment (creatinine clearance < 30 ml/min), anuria.
- Refractory hypokalemia, hyponatremia, hypercalcemia, and symptomatic hyperuricemia.

4.4 Special warnings and precautions for use

Serum electrolyte changes

Valsartan

Concomitant use with potassium supplements, potassium-sparing diuretics, salt substitutes containing potassium, or other agents that may increase potassium levels (heparin, etc.) is not recommended. Monitoring of potassium should be undertaken as appropriate.

Hydrochlorothiazide

Hypokalemia has been reported under treatment with thiazide diuretics, including hydrochlorothiazide. Frequent monitoring of serum potassium is recommended.

Treatment with thiazide diuretics, including hydrochlorothiazide has been associated with hyponatremia and hypochloraemic alkalosis. Thiazides, including hydrochlorothiazide increase the urinary excretion of magnesium, which may result in hypomagnesaemia. Calcium excretion is decreased by thiazide diuretics. This may result in hypercalcemia.

As for any patient receiving diuretic therapy, periodic determination of serum electrolytes should be performed at appropriate intervals.

Sodium, and/or volume-depleted patients

Patients receiving thiazide diuretics, including hydrochlorothiazide, should be observed for clinical signs of fluid or electrolyte imbalance.

In severely sodium-depleted and/or volume-depleted patients, such as those receiving high doses of diuretics, symptomatic hypotension may occur in rare cases after initiation of therapy with Co-Tabuvan. Sodium and/or volume depletion should be corrected before starting treatment with Co-Tabuvan.

Patients with severe chronic heart failure or other conditions with stimulation of the renin angiotensin-aldosterone-system

In patients whose renal function may depend on the activity of the renin-angiotensin aldosterone system (e.g. patients with severe congestive heart failure), treatment with angiotensin converting enzyme inhibitors has been associated with oliguria and/or progressive azotemia, and in rare cases with acute renal failure and/or death. Evaluation of patients with heart failure or post-myocardial infarction should always include assessment of renal function. The use of Co-Tabuvan in patients with severe chronic heart failure has not been established.

Hence it cannot be excluded that because of the inhibition of the renin-angiotensin aldosterone system the application of Co-Tabuvan as well may be associated with impairment of the renal function. Co-Tabuvan should not be used in these patients.

Renal artery stenosis

Co-Tabuvan should not be used to treat hypertension in patients with unilateral or bilateral renal artery stenosis or stenosis of the artery to a solitary kidney, since blood urea and serum creatinine may increase in such patients.

Primary hyperaldosteronism

Patients with primary hyperaldosteronism should not be treated with Co-Tabuvan as their renin-angiotensin system is not activated.

Aortic and mitral valve stenosis, hypertrophic obstructive cardiomyopathy

As with all other vasodilators, special caution is indicated in patients suffering from aortic or mitral stenosis, or hypertrophic obstructive cardiomyopathy (HOCM).

Renal impairment

No dosage adjustment is required for patients with renal impairment with a creatinine clearance ≥ 30 ml/min (see section 4.2). Periodic monitoring of serum potassium, creatinine and uric acid levels is recommended when Co-Tabuvan is used in patients with renal impairment.

Kidney transplantation

There is currently no experience on the safe use of Co-Tabuvan in patients who have recently undergone kidney transplantation.

Hepatic impairment

In patients with mild to moderate hepatic impairment without cholestasis, Co-Tabuvan should be used with caution (see sections 4.2 and 5.2). Thiazides should be used with caution in patients with impaired hepatic function or progressive liver disease, since minor alterations of fluid and electrolyte balance may precipitate hepatic coma.

History of angioedema

Angioedema, including swelling of the larynx and glottis, causing airway obstruction and/or swelling of the face, lips, pharynx, and/or tongue has been reported in patients treated with valsartan; some of these patients previously experienced angioedema with other drugs including ACE inhibitors. Co-Tabuvan should be immediately discontinued in patients who develop angioedema, and Co-Tabuvan should not be re-administered (see section 4.8).

Systemic lupus erythematosus

Thiazide diuretics, including hydrochlorothiazide, have been reported to exacerbate or activate systemic lupus erythematosus.

Other metabolic disturbances

Thiazide diuretics, including hydrochlorothiazide, may alter glucose tolerance and raise serum levels of cholesterol, triglycerides and uric acid. In diabetic patients dosage adjustments of insulin or oral hypoglycaemic agents may be required.

Thiazides may reduce urinary calcium excretion and cause an intermittent and slight elevation of serum calcium in the absence of known disorders of calcium metabolism. Marked hypercalcemia may be evidence of underlying hyperparathyroidism. Thiazides should be discontinued before carrying out tests for parathyroid function.

Photosensitivity

Cases of photosensitivity reactions have been reported with thiazides diuretics (see section 4.8). If photosensitivity reaction occurs during treatment, it is recommended to stop the treatment. If a re-administration of the diuretic is deemed necessary, it is recommended to protect exposed areas to the sun or to artificial UVA.

Pregnancy

Angiotensin II Receptor Antagonists (AIIRAs) should not be initiated during pregnancy. Unless continued AIIRAs therapy is considered essential, patients planning pregnancy should be changed to alternative anti-hypertensive treatments which have an established safety profile for use in pregnancy. When pregnancy is

diagnosed, treatment with AIIRAs should be stopped immediately, and, if appropriate, alternative therapy should be started (see sections 4.3 and 4.6).

General

Caution should be exercised in patients who have shown prior hypersensitivity to other angiotensin II receptor antagonists. Hypersensitivity reactions to hydrochlorothiazide are more likely in patients with allergy and asthma.

Acute Angle-Closure Glaucoma

Hydrochlorothiazide, a sulfonamide, has been associated with an idiosyncratic reaction resulting in acute transient myopia and acute angle-closure glaucoma. Symptoms include acute onset of decreased visual acuity or ocular pain and typically occur within hours to week of a drug initiation. Untreated acute-angle closure glaucoma can lead to permanent vision loss.

The primary treatment is to discontinue hydrochlorothiazide as rapidly as possible. Prompt medical or surgical treatment may need to be considered if the intraocular pressure remains uncontrolled. Risk factors for developing acute angle closure glaucoma may include a history of sulfonamide or penicillin allergy.

4.5 Interaction with other medicinal products and other forms of interaction

Interactions related to both valsartan and hydrochlorothiazide

Concomitant use not recommended

Lithium

Reversible increases in serum lithium concentrations and toxicity have been reported during concurrent use of ACE inhibitors and thiazide, including hydrochlorothiazide. Due to the lack of experience with concomitant use of valsartan and lithium, this combination is not recommended. If the combination proves necessary, careful monitoring of serum lithium levels is recommended.

Concomitant use requiring caution

Other antihypertensive agents

Co-Tabuvan may increase the effects of other agents with antihypertensive properties (e.g. guanethidine, methyldopa, vasodilators, ACEI, ARBs, beta-blockers, calcium channel blockers and DRIs).

Pressor amines (e.g. noradrenaline, adrenaline)

Possible decreased response to pressor amines. The clinical significance of this effect is uncertain and not sufficient to preclude their use.

Non-steroidal anti-inflammatory medicines (NSAIDs), including selective COX-2 inhibitors, acetylsalicylic acid (>3 g/day), and non-selective NSAIDs

NSAIDS can attenuate the antihypertensive effect of both angiotensin II antagonists and hydrochlorothiazide when administered simultaneously. Furthermore, concomitant use of Co-Tabuvan and NSAIDs may lead to worsening of renal function and an increase in serum potassium. Therefore, monitoring of renal function at the beginning of the treatment is recommended, as well as adequate hydration of the patient.

Interactions related to valsartan

Concomitant use not recommended

Potassium-sparing diuretics, potassium supplements, salt substitutes containing potassium and other substances that may increase potassium levels

If a medicinal product that affects potassium levels is considered necessary in combination with valsartan, monitoring of potassium plasma levels is advised.

Transporters

In vitro data indicates that valsartan is a substrate of the hepatic uptake transporter OATP1B1/OATP1B3 and the hepatic efflux transporter MRP2. The clinical relevance of this finding is unknown. Co-administration of inhibitors of the uptake transporter (eg. rifampin, cyclosporine) or efflux transporter (eg. ritonavir) may increase the systemic exposure to valsartan. Exercise appropriate care when initiating or ending concomitant treatment with such drugs.

No interaction

In drug interaction studies with valsartan, no interactions of clinical significance have been found with valsartan or any of the following substances: cimetidine, warfarin, furosemide, digoxin, atenolol, indomethacin, hydrochlorothiazide, amlodipine, glibenclamide. Digoxin and indomethacin could interact with the hydrochlorothiazide component of Co-Tabuvan (see interactions related to hydrochlorothiazide).

Interactions related to hydrochlorothiazide

Concomitant use requiring caution

Medicinal products affecting serum potassium level

The hypokalemic effect of hydrochlorothiazide may be increased by concomitant administration of kaliuretic diuretics, corticosteroids, laxatives, ACTH, amphotericin, carbenoxolone, penicillin G, salicylic acid and derivatives.

If these medicinal products are to be prescribed with the hydrochlorothiazide-valsartan combination, monitoring of potassium plasma levels is advised (see section 4.4).

Medicinal products that could induce torsades de pointes

Due to the risk of hypokalemia, hydrochlorothiazide should be administered with caution when associated with medicinal products that could induce torsades de pointes, in particular Class Ia and Class III antiarrhythmic and some antipsychotics.

Medicinal products affecting serum sodium level

The hyponatremia effect of diuretics may be intensified by concomitant administration of drugs such as antidepressants, antipsychotics, antiepileptics, etc. Caution is advised in long-term administration of these drugs.

Digitalis glycosides

Thiazide-induced hypokalemia or hypomagnesaemia may occur as undesirable effects favoring the onset of digitalis-induced cardiac arrhythmias (see section 4.4).

Calcium salts and vitamin D

Administration of thiazide diuretics, including hydrochlorothiazide, with vitamin D or with calcium salts may potentiate the rise in serum calcium. Concomitant use of thiazide type diuretics with calcium salts may cause hypercalcemia in patients pre-disposed for hypercalcemia (e.g. hyperparathyroidism, malignancy or Vitamin-D-mediated conditions) by increasing tubular calcium reabsorption.

Antidiabetic agents (oral agents and insulin)

Thiazides may alter glucose tolerance. Dose adjustment of the antidiabetic medicinal product may be necessary.

Metformin should be used with caution because of the risk of lactic acidosis induced by possible functional renal failure linked to hydrochlorothiazide.

Beta blockers and diazoxide

Concomitant use of thiazide diuretics, including hydrochlorothiazide, with beta blockers may increase the risk of hyperglycemia. Thiazide diuretics, including hydrochlorothiazide, may enhance the hyperglycemic effect of diazoxide.

Medicinal products used in the treatment of gout (probenecid, sulfinpyrazone and allopurinol)

Dose adjustment of uricosuria medications may be necessary as hydrochlorothiazide may raise the level of serum uric acid. Increase of dosage of probenecid or sulfinpyrazone may be necessary. Co-administration of thiazide diuretics, including hydrochlorothiazide, may increase the incidence of hypersensitivity reactions to allopurinol.

Anticholinergic agents and other medicinal products affecting gastric motility

The bioavailability of thiazide-type diuretics may be increased by anticholinergic agents (e.g. atropine, biperiden), apparently due to a decrease in gastrointestinal motility and the stomach emptying rate. Conversely, it is anticipated that prokinetic drugs such as cisapride may decrease the bioavailability of thiazide-type diuretics.

Amantadine

Thiazides, including hydrochlorothiazide, may increase the risk of adverse effects caused by amantadine.

Ion exchange resins

Absorption of thiazide diuretics, including hydrochlorothiazide, is decreased by cholestyramine or colestipol. This could result in sub-therapeutic effects of thiazide diuretics. However, staggering the dosage of hydrochlorothiazide and resin such that hydrochlorothiazide is administered at least 4 h before or 4-6 h after the administration of resins would potentially minimize the interaction.

Cytotoxic agents

Thiazides, including hydrochlorothiazide, may reduce renal excretion of cytotoxic agents (e.g. cyclophosamide, methotrexate) and potentiate their myelosuppressive effects.

Non-depolarizing skeletal muscle relaxants (e.g. tubocurarine)

Thiazides, including hydrochlorothiazide, potentiate the action of skeletal muscle relaxants such as curare derivatives.

Cyclosporine

Concomitant treatment with cyclosporine may increase the risk of hyperuricemia and gout type complications.

Alcohol, barbiturates or narcotics

Concomitant administration of thiazide diuretics with substances that also have a blood pressure lowering effect (e.g. by reducing sympathetic central nervous system activity or direct vasodilatation activity) may potentiate orthostatic hypotension.

Methyldopa

There have been isolated reports of hemolytic anemia in patients receiving concomitant treatment with methyldopa and hydrochlorothiazide.

Iodine contrast media

In case of diuretic-induced dehydration, there is an increased risk of acute renal failure, especially with high doses of the iodine product. Patients should be rehydrated before the administration.

4.6 Pregnancy and lactation

Pregnancy

Pregnancy Category D

Use of drugs that act on the renin-angiotensin system during the second and third trimesters of pregnancy reduces fetal renal function and increases fetal and neonatal morbidity and death. Resulting oligohydramnios can be associated with fetal lung hypoplasia and skeletal deformations. Potential neonatal adverse effects include skull hypoplasia, anuria, hypotension, renal failure, and death. When pregnancy is detected, discontinue valsartan and hydrochlorothiazide tablets as soon as possible. These adverse outcomes are usually associated with use of these drugs in the second and third trimester of pregnancy. Most epidemiologic studies examining fetal abnormalities after exposure to antihypertensive use in the first trimester have not distinguished drugs affecting the renin-angiotensin system from other antihypertensive agents. Appropriate management of maternal hypertension during pregnancy is important to optimize outcomes for both mother and fetus.

In the unusual case that there is no appropriate alternative to therapy with drugs affecting the renin-angiotensin system for a particular patient, apprise the mother of the potential risk to the fetus. Perform serial ultrasound examinations to assess the intra-amniotic environment. If oligohydramnios is observed, discontinue valsartan and hydrochlorothiazide tablets, unless it is considered lifesaving for the mother. Fetal testing may be appropriate, based on the week of pregnancy. Patients and physicians should be aware, however, that oligohydramnios may not appear until after the fetus has sustained irreversible injury. Closely observe infants with histories of *in utero* exposure to valsartan and hydrochlorothiazide tablets for hypotension, oliguria, and hyperkalemia.

Hydrochlorothiazide

Thiazides can cross the placenta, and concentrations reached in the umbilical vein approach those in the maternal plasma. Hydrochlorothiazide, like other diuretics, can cause placental hypoperfusion. It accumulates in the amniotic fluid, with reported concentrations up to 19 times higher than in umbilical vein plasma. Use of thiazides during pregnancy is associated with a risk of fetal or neonatal jaundice or thrombocytopenia. Since they do not prevent or alter the course of EPH (Edema, Proteinuria, and Hypertension) gestosis (preeclampsia), these drugs should not be used to treat hypertension in pregnant

women. The use of hydrochlorothiazide for other indications (e.g., heart disease) in pregnancy should be avoided.

Lactation

No information is available regarding the use of valsartan during breastfeeding. Hydrochlorothiazide is excreted in human milk. Therefore, the use of Co-Tabuvan during breast feeding is not recommended. Alternative treatments with better established safety profiles during breast-feeding are preferable, especially while nursing a newborn or preterm infant.

4.7 Effects on ability to drive and use machines

No studies on the effect of Co-Tabuvan, on the ability to drive and use machines have been performed. When driving vehicles or operating machines it should be taken into account that occasionally dizziness or weariness may occur.

4.8 Undesirable effects

Adverse reactions reported in clinical trials and laboratory findings occurring more frequently with valsartan plus hydrochlorothiazide versus placebo and individual post marketing reports are presented below according to system organ class. Adverse reactions known to occur with each component given individually but which have not been seen in clinical trials may occur during treatment with valsartan/ hydrochlorothiazide.

Adverse drug reactions are ranked by frequency, the most frequent first, using the following convention: very common (≥ 1/10); common (≥ 1/100 to < 1/10); uncommon (≥ 1/1,000 to < 1/100); rare (≥ 1/10,000 to < 1/1,000); very rare (< 1/10,000), not known (cannot be estimated from the available data). Within each frequency grouping, adverse reactions are ranked in order of decreasing seriousness.

Table 1. Frequency of adverse reactions with valsartan/hydrochlorothiazide

Metabolism and nutrition disorders	
Uncommon	Dehydration
Nervous system disorders	
Very rare	Dizziness
Uncommon	Paraesthesia
Not known	Syncope
Eye disorders	
Uncommon	Vision blurred
Ear and labyrinth disorders	
Uncommon	Tinnitus
Vascular disorders	
Uncommon	Hypotension
Respiratory, thoracic and mediastinal disorders	
Uncommon	Cough
Not known	Non cardiogenic pulmonary oedema
Gastrointestinal disorders	

Very rare Diarrhoea

Musculoskeletal and connective tissue disorders

Uncommon	Myalgia
Very rare	Arthralgia

Renal and urinary disorders

Not known	Impaired renal function

General disorders and administration site conditions

Uncommon Fatigue

Investigations

Not known Serum uric acid increased, Serum bilirubin and Serum creatinine increased, Hypokalemia, Hyponatremia, Elevation of Blood Urea Nitrogen, Neutropenia

Additional information on the individual components

Adverse reactions previously reported with one of the individual components may be potential undesirable effects with Co-Tabuvan as well, even if not observed in clinical trials or during post marketing period.

Table 2. Frequency of adverse reactions with valsartan

Blood and lymphatic system disorders

Not known Decrease in hemoglobin, decrease in hematocrit, thrombocytopenia

Immune system disorders

Not known Other hypersensitivity/allergic reactions including serum sickness

Metabolism and nutrition disorders

Not known Increase of serum potassium, hyponatremia

Ear and labyrinth disorders

Uncommon Vertigo

Vascular disorders

Not known Vasculitis

Gastrointestinal disorders

Uncommon Abdominal pain

Hepatobiliary disorders

Not known Elevation of liver function values

Skin and subcutaneous tissue disorders

Not known Angioedema, rash, pruritus

Renal and urinary disorders

Not known Renal failure

Table 3. Frequency of adverse reactions with hydrochlorothiazide

Hydrochlorothiazide has been extensively prescribed for many years, frequently in higher doses than those administered with Co-Tabuvan. The following adverse reactions have been reported in patients treated with monotherapy of thiazide diuretics, including hydrochlorothiazide:

Blood and lymphatic system disorders	
Rare	Thrombocytopenia sometimes with purpura
Very rare	Agranulocytosis, leucopenia, haemolytic anaemia, bone marrow failure
Not known	Aplastic anemia
Immune system disorders	
Very rare	Hypersensitivity reactions
Metabolism and nutrition disorders	
Very common	Hypokalaemia, blood lipids increased (mainly at higher doses)
Common	Hyponatraemia, hypomagnesaemia, hyperuricaemia
Rare	Hypercalcaemia, hyperglycaemia, glycosuria and worsening of diabetic metabolic state
Very rare	Hypochloraemic alkalosis
Psychiatric disorders	
Rare	Depression, sleep disturbances
Nervous system disorders	
Rare	Headache, dizziness, paraesthesia
Eye disorders	
Rare	Visual impairment
Not known	Acute angle-closure glaucoma
Cardiac disorders	
Rare	Cardiac arrhythmias
Vascular disorders	
Common	Postural hypotension
Respiratory, thoracic and mediastinal disorders	
Very rare	Respiratory distress including pneumonitis and pulmonary edema
Gastrointestinal disorders	
Common	Loss of appetite, mild nausea and vomiting
Rare	Constipation, gastrointestinal discomfort, diarrhoea

Very rare	Pancreatitis

Hepatobiliary disorders

Rare Intrahepatic cholestasis or jaundice

Renal and urinary disorders
Not known Renal dysfunction, acute renal failure

Skin and subcutaneous tissue disorders

Common	Urticaria and other forms of rash
Rare	Photosensitisation
Very rare	Necrotising vasculitis and toxic epidermal necrolysis, cutaneous lupus erythematosus-like reactions, reactivation of cutaneous lupus erythematosus
Not known	Erythema multiforme

General disorders and administration site conditions

Not known Pyrexia, asthenia

Musculoskeletal and connective tissue disorders

Not known Muscle spasm

Reproductive system and breast disorders

Common Impotence

4.9 Overdose

Symptoms

Overdose with valsartan may result in marked hypotension, which could lead to depressed level of consciousness, circulatory collapse and/or shock. In addition, the following signs and symptoms may occur due to an overdose of the hydrochlorothiazide component: nausea, somnolence, hypovolemia, and electrolyte disturbances associated with cardiac arrhythmias and muscle spasms.

Treatment

The therapeutic measures depend on the time of ingestion and the type and severity of the symptoms, stabilization of the circulatory condition being of prime importance.

If hypotension occurs, the patient should be placed in the supine position and salt and volume supplementation should be given rapidly.

Valsartan cannot be eliminated by means of hemodialysis because of its strong plasma binding behavior whereas clearance of hydrochlorothiazide will be achieved by dialysis.

5. Pharmacological properties

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Angiotensin II antagonists and diuretics, valsartan and diuretics; ATC Code: C09D A03

Valsartan/hydrochlorothiazide

Co-Tabuvan 80/12.5 mg Tablets only:

In a double-blind, randomized, active-controlled trial in patients not adequately controlled on hydrochlorothiazide 12.5 mg, significantly greater mean systolic/diastolic BP reductions were observed with the combination of valsartan/hydrochlorothiazide 80/12.5 mg (14.9/11.3 mmHg) compared to hydrochlorothiazide 12.5 mg (5.2/2.9 mmHg) and hydrochlorothiazide 25 mg (6.8/5.7 mmHg). In addition, a significantly greater percentage of patients responded (diastolic BP <90 mmHg or reduction ≥10 mmHg) with valsartan/hydrochlorothiazide 80/12.5 mg (60%) compared to hydrochlorothiazide 12.5 mg (25%) and hydrochlorothiazide 25 mg (27%).

In a double-blind, randomized, active-controlled trial in patients not adequately controlled on valsartan 80 mg, significantly greater mean systolic/diastolic BP reductions were observed with the combination of valsartan/hydrochlorothiazide 80/12.5 mg (9.8/8.2 mmHg) compared to valsartan 80 mg (3.9/5.1 mmHg) and valsartan 160 mg (6.5/6.2 mmHg). In addition, a significantly greater percentage of patients responded (diastolic BP
<90 mmHg or reduction ≥10 mmHg) with valsartan/hydrochlorothiazide 80/12.5 mg (51%) compared to valsartan 80 mg (36%) and valsartan 160 mg (37%).

In a double-blind, randomized, placebo-controlled, factorial design trial comparing various dose combinations of valsartan/hydrochlorothiazide to their respective components, significantly greater mean systolic/diastolic BP reductions were observed with the combination of valsartan/hydrochlorothiazide 80/12.5 mg (16.5/11.8 mmHg) compared to placebo (1.9/4.1 mmHg) and both hydrochlorothiazide 12.5 mg (7.3/7.2 mmHg) and valsartan 80 mg (8.8/8.6 mmHg). In addition, a significantly greater percentage of patients responded (diastolic BP <90 mmHg or reduction ≥10 mmHg) with valsartan/hydrochlorothiazide 80/12.5 mg (64%) compared to placebo (29%) and hydrochlorothiazide (41%).

Co-Tabuvan 160/12.5 mg and 160/25mg Tablets only:

In a double-blind, randomized, active-controlled trial in patients not adequately controlled on hydrochlorothiazide 12.5 mg, significantly greater mean systolic/diastolic BP reductions were observed with the combination of valsartan/ hydrochlorothiazide 160/12.5 mg (12.4/7.5 mmHg) compared to hydrochlorothiazide 25 mg (5.6/2.1 mmHg). In addition, a significantly greater percentage of patients responded (BP <140/90 mmHg or SBP reduction ≥20 mmHg or DBP reduction ≥10 mmHg) with valsartan/hydrochlorothiazide 160/12.5 mg (50%) compared to hydrochlorothiazide 25 mg (25%).

In a double-blind, randomized, active-controlled trial in patients not adequately controlled on valsartan 160 mg, significantly greater mean systolic/diastolic BP reductions were observed with both the combination of valsartan/hydrochlorothiazide 160/25 mg (14.6/11.9 mmHg) and valsartan/hydrochlorothiazide 160/12.5 mg (12.4/10.4 mmHg) compared to valsartan 160 mg (8.7/8.8 mmHg). The difference in BP reductions between the 160/25 mg and 160/12.5 mg doses also reached statistical significance. In addition, a significantly greater percentage of patients responded (diastolic BP <90 mmHg or reduction ≥10 mmHg) with valsartan/hydrochlorothiazide 160/25 mg (68%) and 160/12.5 mg (62%) compared to valsartan 160 mg (49%).

In a double-blind, randomized, placebo-controlled, factorial design trial comparing various dose combinations of valsartan/hydrochlorothiazide to their respective components, significantly greater mean systolic/diastolic BP reductions were observed with the combination of valsartan/hydrochlorothiazide 160/12.5 mg (17.8/13.5 mmHg) and 160/25 mg (22.5/15.3 mmHg) compared to placebo (1.9/4.1 mmHg) and the respective monotherapies, i.e., hydrochlorothiazide 12.5 mg (7.3/7.2 mmHg), hydrochlorothiazide 25 mg (12.7/9.3 mmHg) and valsartan 160 mg (12.1/9.4 mmHg). In addition, a significantly greater percentage of patients responded (diastolic BP <90 mmHg or reduction ≥10 mmHg) with valsartan/hydrochlorothiazide 160/25 mg (81%) and valsartan/hydrochlorothiazide 160/12.5 mg (76%) compared to placebo (29%) and the respective monotherapies, i.e., hydrochlorothiazide 12.5 mg (41%), hydrochlorothiazide 25

mg (54%), and valsartan 160 mg (59%).

Co-Tabuvan 80/12.5mg, 160/12.5 mg and 160/25mg Tablets:

Dose-dependent decreases in serum potassium occurred in controlled clinical studies with valsartan + hydrochlorothiazide. Reduction in serum potassium occurred more frequently in patients given 25 mg hydrochlorothiazide than in those given 12.5 mg hydrochlorothiazide. In controlled clinical trials with valsartan/hydrochlorothiazide the potassium lowering effect of hydrochlorothiazide was attenuated by the potassium-sparing effect of valsartan.

Beneficial effects of valsartan in combination with hydrochlorothiazide on cardiovascular mortality and morbidity are currently unknown.

Epidemiological studies have shown that long-term treatment with hydrochlorothiazide reduces the risk of cardiovascular mortality and morbidity.

Valsartan

Valsartan is an orally active and specific angiotensin II (Ang II) receptor antagonist. It acts selectively on the AT_1 receptor subtype, which is responsible for the known actions of angiotensin II. The increased plasma levels of Ang II following AT_1receptor blockade with valsartan may stimulate the unblocked AT_2 receptor, which appears to counterbalance the effect of the AT_1 receptor. Valsartan does not exhibit any partial agonist activity at the AT_1 receptor and has much (about 20,000 fold) greater affinity for the AT_1 receptor than for the AT_2 receptor. Valsartan is not known to bind to or block other hormone receptors or ion channels known to be important in cardiovascular regulation.

Valsartan does not inhibit ACE, also known as kininase II, which converts Ang I to Ang II and degrades bradykinin. Since there is no effect on ACE and no potentiation of bradykinin or substance P, angiotensin II antagonists are unlikely to be associated with coughing. In clinical trials where valsartan was compared with an ACE inhibitor, the incidence of dry cough was significantly ($P < 0.05$) lower in patients treated with valsartan than in those treated with an ACE inhibitor (2.6% versus 7.9% respectively). In a clinical trial of patients with a history of dry cough during ACE inhibitor therapy, 19.5% of trial subjects receiving valsartan and 19.0% of those receiving a thiazide diuretic experienced cough compared to 68.5% of those treated with an ACE inhibitor ($P < 0.05$).

Administration of valsartan to patients with hypertension results in reduction of blood pressure without affecting pulse rate. In most patients, after administration of a single oral dose, onset of antihypertensive activity occurs within 2 hours, and the peak reduction of blood pressure is achieved within 4-6 hours. The antihypertensive effect persists over 24 hours after dosing. During repeated dosing, the maximum reduction in blood pressure with any dose is generally attained within 2-4 weeks and is sustained during long-term therapy. Combined with hydrochlorothiazide, a significant additional reduction in blood pressure is achieved.

Abrupt withdrawal of valsartan has not been associated with rebound hypertension or other adverse clinical events.

In hypertensive patients with type 2 diabetes and microalbuminuria, valsartan has been shown to reduce the urinary excretion of albumin. The MARVAL (Micro Albuminuria Reduction with Valsartan) study assessed the reduction in urinary albumin excretion (UAE) with valsartan (80-160 mg/od) versus amlodipine (5-10 mg/od), in 332 type 2 diabetic patients (mean age: 58 years; 265 men) with microalbuminuria (valsartan: 58 µg/min; amlodipine: 55.4 µg/min), normal or high blood pressure and with preserved renal function (blood creatinine <120 µmol/l). At 24 weeks, UAE was reduced ($p < 0.001$) by 42% (–24.2 µg/min; 95% CI: –40.4 to –19.1) with valsartan and approximately 3% (–1.7 µg/min; 95% CI: –5.6 to 14.9) with amlodipine despite similar rates of blood pressure reduction in both groups. The Tabuvan Reduction of Proteinuria (DROP) study further examined the efficacy of valsartan in reducing

UAE in 391 hypertensive patients (BP=150/88 mmHg) with type 2 diabetes, albuminuria (mean=102 µg/min; 20–700 µg/min) and preserved renal function (mean serum creatinine = 80 µmol/l). Patients were randomized to one of 3 doses of valsartan (160, 320 and 640 mg/od) and treated for 30 weeks. The purpose of the study was to determine the optimal dose of valsartan for reducing UAE in hypertensive patients with type 2 diabetes. At 30 weeks, the percentage change in UAE was significantly reduced by 36% from baseline with valsartan 160 mg (95%CI: 22 to 47%), and by 44% with valsartan 320 mg (95%CI: 31 to 54%). It was concluded that 160-320 mg of valsartan produced clinically relevant reductions in UAE in hypertensive patients with type 2 diabetes.

Hydrochlorothiazide

The site of action of thiazide diuretics is primarily in the renal distal convoluted tubule. It has been shown that there is a high-affinity receptor in the renal cortex as the primary binding site for the thiazide diuretic action and inhibition of NaCl transport in the distal convoluted tubule. The mode of action of thiazides is through inhibition of the Na^+Cl symporter perhaps by competing for the Cl^- site, thereby affecting electrolyte reabsorption mechanisms: directly increasing sodium and chloride excretion to an approximately equal extent, and indirectly by this diuretic action reducing plasma volume, with consequent increases in plasma renin activity, aldosterone secretion and urinary potassium loss, and a decrease in serum potassium. The renin-aldosterone link is mediated by angiotensin II, so with co-administration of valsartan the reduction in serum potassium is less pronounced as observed under monotherapy with hydrochlorothiazide.

5.2 Pharmacokinetic properties

Valsartan/hydrochlorothiazide

The systemic availability of hydrochlorothiazide is reduced by about 30% when coadministered with valsartan. The kinetics of valsartan are not markedly affected by the coadministration of hydrochlorothiazide. This observed interaction has no impact on the combined use of valsartan and hydrochlorothiazide, since controlled clinical trials have shown a clear anti-hypertensive effect, greater than that obtained with either active substance given alone, or placebo.

Valsartan

Absorption

Following oral administration of valsartan alone, peak plasma concentrations of valsartan are reached in 2–4 hours. Mean absolute bioavailability is 23%. Food decreases exposure (as measured by AUC) to valsartan by about 40% and peak plasma concentration (C_{max}) by about 50%, although from about 8 h post dosing plasma valsartan concentrations are similar for the fed and fasted groups. This reduction in AUC is not, however, accompanied by a clinically significant reduction in the therapeutic effect, and valsartan can therefore be given either with or without food.

Distribution

The steady-state volume of distribution of valsartan after intravenous administration is about 17 liters, indicating that valsartan does not distribute into tissues extensively. Valsartan is highly bound to serum proteins (94 – 97%), mainly serum albumin.

Biotransformation

Valsartan is not biotransformed to a high extent as only about 20% of dose is recovered as metabolites. A hydroxy metabolite has been identified in plasma at low concentrations (less than 10% of the valsartan AUC). This metabolite is pharmacologically inactive.

Elimination

Valsartan shows multiexponential decay kinetics ($t_{½\alpha}$ <1 h and $t_{½ß}$ about 9 h). Valsartan is primarily eliminated in feces (about 83% of dose) and urine (about 13% of dose), mainly as unchanged drug. Following intravenous administration, plasma clearance of valsartan is about 2 l/h and its renal clearance is 0.62 l/h (about 30% of total clearance). The half-life of valsartan is 6 hours.

Hydrochlorothiazide

Absorption

The absorption of hydrochlorothiazide, after an oral dose, is rapid (t_{max} about 2 h). The increase in mean AUC is linear and dose proportional in the therapeutic range.

The effect of food on hydrochlorothiazide absorption, if any, has little clinical significance. Absolute bioavailability of hydrochlorothiazide is 70% after oral administration.

Distribution

The apparent volume of distribution is 4–8 l/kg.

Circulating hydrochlorothiazide is bound to serum proteins (40–70%), mainly serum albumin. Hydrochlorothiazide also accumulates in erythrocytes at approximately 3 times the level in plasma.

Elimination

Hydrochlorothiazide is eliminated predominantly as unchanged drug. Hydrochlorothiazide is eliminated from plasma with a half-life averaging 6 to 15 hours in the terminal elimination phase. There is no change in the kinetics of hydrochlorothiazide on repeated dosing, and accumulation is minimal when dosed once daily. There is more than 95% of the absorbed dose being excreted as unchanged compound in the urine. The renal clearance is composed of passive filtration and active secretion into the renal tubule.

Special populations

Elderly

A somewhat higher systemic exposure to valsartan was observed in some elderly subjects than in young subjects; however, this has not been shown to have any clinical significance.

Limited data suggest that the systemic clearance of hydrochlorothiazide is reduced in both healthy and hypertensive elderly subjects compared to young healthy volunteers.

Renal impairment

At the recommended dose of Co-Tabuvan no dose adjustment is required for patients with a Glomerular Filtration Rate (GFR) of 30–70 ml/min.

In patients with severe renal impairment (GFR <30 ml/min) and patients undergoing dialysis no data are available for Co-Tabuvan. Valsartan is highly bound to plasma protein and is not to be removed by dialysis, whereas clearance of hydrochlorothiazide will be achieved by dialysis.

In the presence of renal impairment, mean peak plasma levels and AUC values of hydrochlorothiazide are increased and the urinary excretion rate is reduced. In patients with mild to moderate renal impairment, a 3-fold increase in hydrochlorothiazide AUC has been observed. In patients with severe renal impairment

an 8-fold increase in AUC has been observed. Hydrochlorothiazide is contraindicated in patients with severe renal impairment (see section 4.3).

Hepatic impairment

In a pharmacokinetics trial in patients with mild (n=6) to moderate (n=5) hepatic dysfunction, exposure to valsartan was increased approximately 2-fold compared with healthy volunteers (see sections 4.2 and 4.4).

There is no data available on the use of valsartan in patients with severe hepatic dysfunction (see section 4.3). Hepatic disease does not significantly affect the pharmacokinetics of hydrochlorothiazide.

5.3 Preclinical safety data

The potential toxicity of the valsartan - hydrochlorothiazide combination after oral administration was investigated in rats and marmosets in studies lasting up to six months. No findings emerged that would exclude the use of therapeutic doses in man.

The changes produced by the combination in the chronic toxicity studies are most likely to have been caused by the valsartan component. The toxicological target organ was the kidney, the reaction being more marked in the marmoset than the rat. The combination led to kidney damage (nephropathy with tubular basophilia, rises in plasma urea, plasma creatinine and serum potassium, increases in urine volume and urinary electrolytes from 30 mg/kg/day valsartan + 9 mg/kg/day hydrochlorothiazide in rats and 10 + 3 mg/kg/d in marmosets), probably by way of altered renal hemodynamics. These doses in rat, respectively, represent 0.9 and 3.5–times the maximum recommended human dose (MRHD) of valsartan and hydrochlorothiazide on a mg/m^2 basis. These doses in marmoset, respectively, represent 0.3 and 1.2–times the maximum recommended human dose (MRHD) of valsartan and hydrochlorothiazide on a mg/m^2 basis. (Calculations assume an oral dose of 320 mg/day valsartan in combination with 25 mg/day hydrochlorothiazide and a 60-kg patient.)

High doses of the valsartan - hydrochlorothiazide combination caused falls in red blood cell indices (red cell count, hemoglobin, hematocrit, from 100 + 31 mg/kg/d in rats and 30 + 9 mg/kg/d in marmosets). These doses in rat, respectively, represent 3.0 and 12 times the maximum recommended human dose (MRHD) of valsartan and hydrochlorothiazide on a mg/m^2 basis. These doses in marmoset, respectively, represent 0.9 and 3.5 times the maximum recommended human dose (MRHD) of valsartan and hydrochlorothiazide on a mg/m^2 basis. (Calculations assume an oral dose of 320 mg/day valsartan in combination with 25 mg/day hydrochlorothiazide and a 60-kg patient).

In marmosets, damage was observed in the gastric mucosa (from 30 + 9 mg/kg/d). The combination also led in the kidney to hyperplasia of the afferent aterioles (at 600 + 188 mg/kg/d in rats and from 30 + 9 mg/kg/d in marmosets). These doses in marmoset, respectively, represent 0.9 and 3.5 times the maximum recommended human dose (MRHD) of valsartan and hydrochlorothiazide on a mg/m^2 basis.
These doses in rat, respectively, represent 18 and 73 times the maximum recommended human dose (MRHD) of valsartan and hydrochlorothiazide on a mg/m^2 basis. (Calculations assume an oral dose of 320 mg/day valsartan in combination with 25 mg/day hydrochlorothiazide and a 60-kg patient).

The above-mentioned effects appear to be due to the pharmacological effects of high valsartan doses (blockade of angiotensin II-induced inhibition of renin release, with stimulation of the renin-producing cells) and also occur with ACE inhibitors. These findings appear to have no relevance to the use of therapeutic doses of valsartan in humans.

The valsartan - hydrochlorothiazide combination was not tested for mutagenicity, chromosomal breakage or carcinogenicity, since there is no evidence of interaction between the two substances. However, these tests were performed separately with valsartan and hydrochlorothiazide, and produced no evidence of mutagenicity, chromosomal breakage or carcinogenicity.

In rats, maternally toxic doses of valsartan (600 mg/kg/day) during the last days of gestation and lactation led to lower survival, lower weight gain and delayed development (pinna detachment and ear-canal

opening) in the offspring (see section 4.6). These doses in rats (600 mg/kg/day) are approximately 18 times the maximum recommended human dose on a mg/m^2 basis (calculations assume an oral dose of 320 mg/day and a 60-kg patient). Similar findings were seen with valsartan/hydrochlorothiazide in rats and rabbits. In embryo-fetal development (Segment II) studies with valsartan/hydrochlorothiazide in rat and rabbit, there was no evidence of teratogenicity; however, fetotoxicity associated with maternal toxicity was observed.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Core:
Microcrystalline cellulose
Crospovidone
Colloidal Silicone Dioxide
Magnesium Stearate

Coating:
Opadry
Ferric Oxide Red
Carnauba Wax

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

2 years

6.4 Special precautions for storage

Do not store above 30°C.

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

6.5 Nature and contents of container

Three Aluminum – Aluminum blisters of 10 tablets each, packed in a printed carton with a folded leaflet

6.6 Special precautions for disposal and other handling

No specific instructions for use or handling.

7. MARKETING AUTHORISATION HOLDER

Tabuk Pharmaceutical Manufacturing Company
P.O. Box 3633
Tabuk - Saudi Arabia
Tel: 00966144283030
Fax: 00966144283031

8. MARKETING AUTHORISATION NUMBER(S)

Marketing Authorization Numbers in Ethiopia: 05824/07652/REN/2020

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

- Date of first authorization in Ethiopia: 20 December 2016
- Date of latest renewal in Ethiopia: 01 April 2020

10. DATE OF REVISION OF THE TEXT

August 2023