

AN OVERVIEW ON OLMESARTAN

Dr. Rajiv Tonk*¹, Lalit Kumar², Jainik Khamar³, Nikhil Varshney⁴ and Saurabh Agrahari⁵

^{1,2,3,4}Delhi Pharmaceutical Science & Research University, New Delhi.

⁵N. K. B. R. College of Pharmacy & Research Center, Meerut.

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***Corresponding Author**

Dr. Rajiv Tonk

Delhi Pharmaceutical
Science & Research
University, New Delhi.

ABSTRACT

Today, Antihypertensive therapy is used to prevent the complication of the high blood pressure like stroke & myocardial infarction. Some evidence show that the reduction of the blood pressure 5 mmHg that can decrease the risk of stroke by 34%, of ischaemic heart disease by 21% & reduce the likelihood of dementia, heart failure & mortality from cardiac disease.^[16] In this review article we include the olmesartan synthesis, mechanism, structure activity relationship, preclinical & clinical study, post marketing surveillance, all brand of olmesartan available in India & also in world, Generic names, pharmacokinetic property.

INTRODUCTION

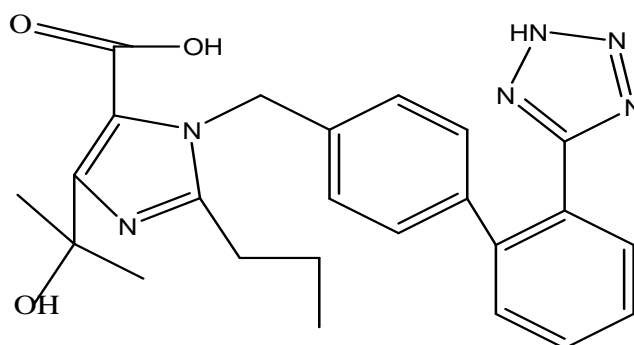
The angiotensin II receptor antagonist was begun in 1970s century & the main focused on peptide based analogues of the natural agonist. The prototypical compound that resulted from these studies were saralasin, an octapeptide in which the Asp₁ & Phe₈ residues of angiotensin II were replaced with SAR (Sarcosine, N- methylglycine) & Ile, respectively.^[1] ARBs is not only depress blood pressure but also repress vascular injury.^[18] ARBs are preferently excreted in the bile, so it applied in thye end stage of the renal disease.^[19] Most ARBs was show the high affinity with serum proteins like the albumin, so that systemic exposure was not affected reducing during haemolysis do not affect efficacy of ARBs.^[20] In recent all advancement show ARBs upon hemodialysis patients improve mortality.^[21-23]

In the development of the losartan describe the antihypertensive effect of a series of imidazole 5- acetic acid analogues. The compound were exemplified by S- 8308 & after found to block the angiotensin II receptor. A computerized molecular modeling overlap of

angiotensin II with the structure of S-8308 revealed three common structural features.

- 1- The ionized carboxylate of S-8308 correlated with the C-terminal carboxylate of angiotensin II.
- 2- The imidazole ring of S-8308 correlated with the hydrocarbon side chain of the His₆ residue.
- 3- N-butyl group of S-8308 correlated with the hydrocarbon side chain of the Ile₅ residue.

Diagram

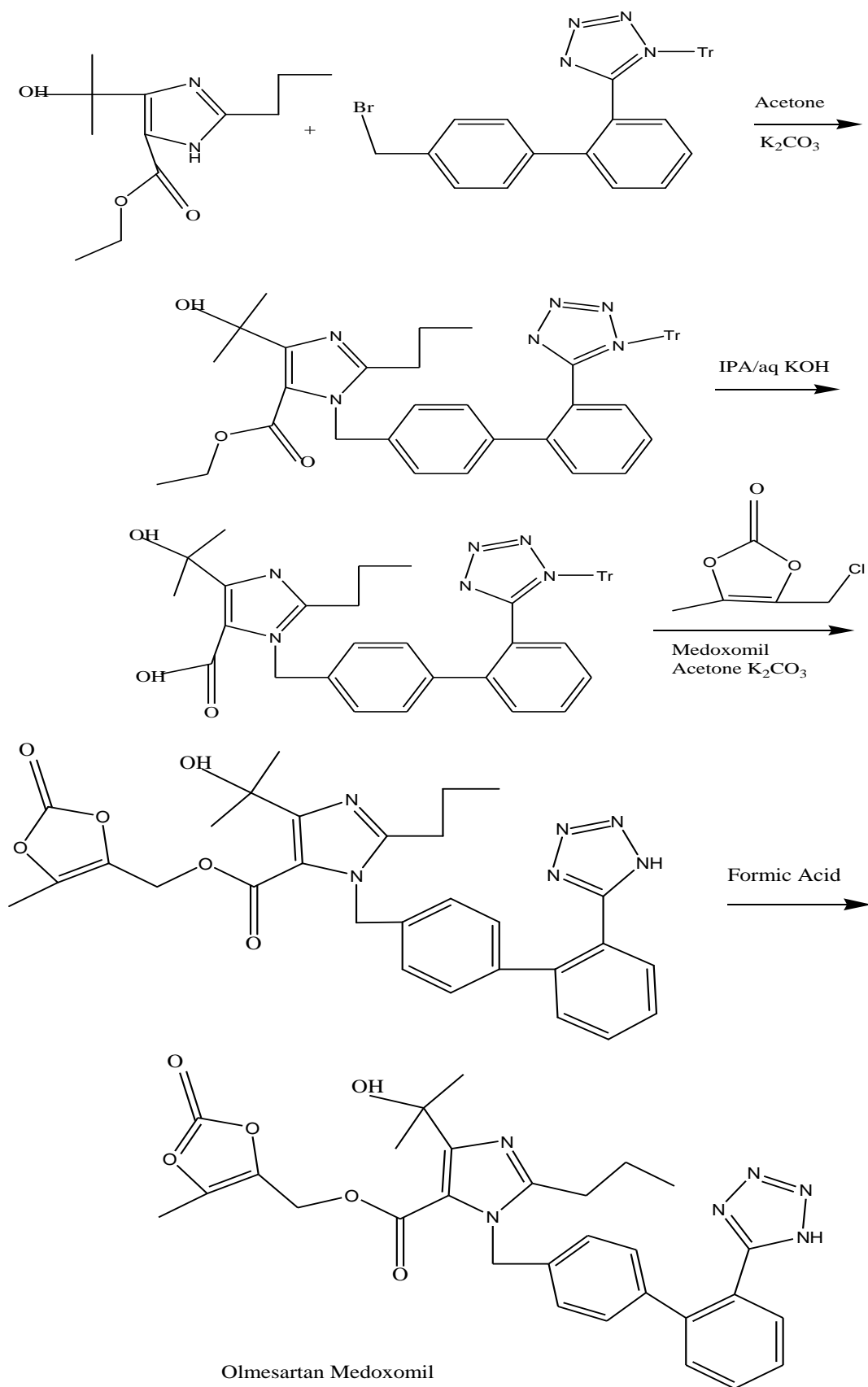


Olmesartan

Structure – 1.

In the recent discovery of the Olmesartan, it is useful in the treatment of hypertension, heart failure, renal disease.^[2-5] The rennin – angiotensin – aldosterone system (RAAS) also helps in the regulation of the blood pressure & pathogenesis of hypertension. Angiotensinogen, produced by the liver that is converted by the liver converted to angiotensin I by the rennin, which is secreted by the juxtaglomerular cells in the kidney. Angiotensin – converting enzyme (ACE) convert A-I to A-II, a powerful peptide hormone responsible for the myriad of cellular events.^[6,7] ACE inhibitors block the formation of A-II, however they also prevent the breakdown of bradykinin.

Synthesis of Olmesartan



Scheme -1.

Author G. Venkann *et al* synthesized Olmesartan medoxomil.^[17]

Reaction flasks were oven dried at 200°C, flame – dried, & flushed with dry nitrogen prior to use. All moisture & air – sensitive reactions were carried out under an atmosphere of dry nitrogen.^[17] TLC was performed on Kieselgel 60 F254 silica- coated aluminium plates (Merck) & visualized by UV light ($\lambda = 254$ nm) or by spraying with a solution of KMnO_4 . Organic extract were dried over anhydrous Na_2SO_4 . Flash chromatography was done with kieselgel 60 brand silica gel (230-400 mesh). The melting points of olmesartan were determined in an open capillary tube using a Buchi B-540 melting point instrument & were uncorrected. The IR spectra were obtained by the help of Nicolet 380 FT-IR instrument (neat for liquids & as KBr pellets for solids), HPLC (Agilent Technologies, 1200 series). NMR spectra of olmesartan were recorded with a varian 300 MHz Mercurt plus Spectrometer at

300 MHz (^1H).^[17] Chemical shifts were given in ppm relative to trimethylsilane (TMS). Mass spectra were recorded on waters Quattro premier XE triple quadrupole spectrometer using either electron spray ionization (ESI) or atmospheric pressure chemical ionization (APCI) technique.

Mechanism of Action

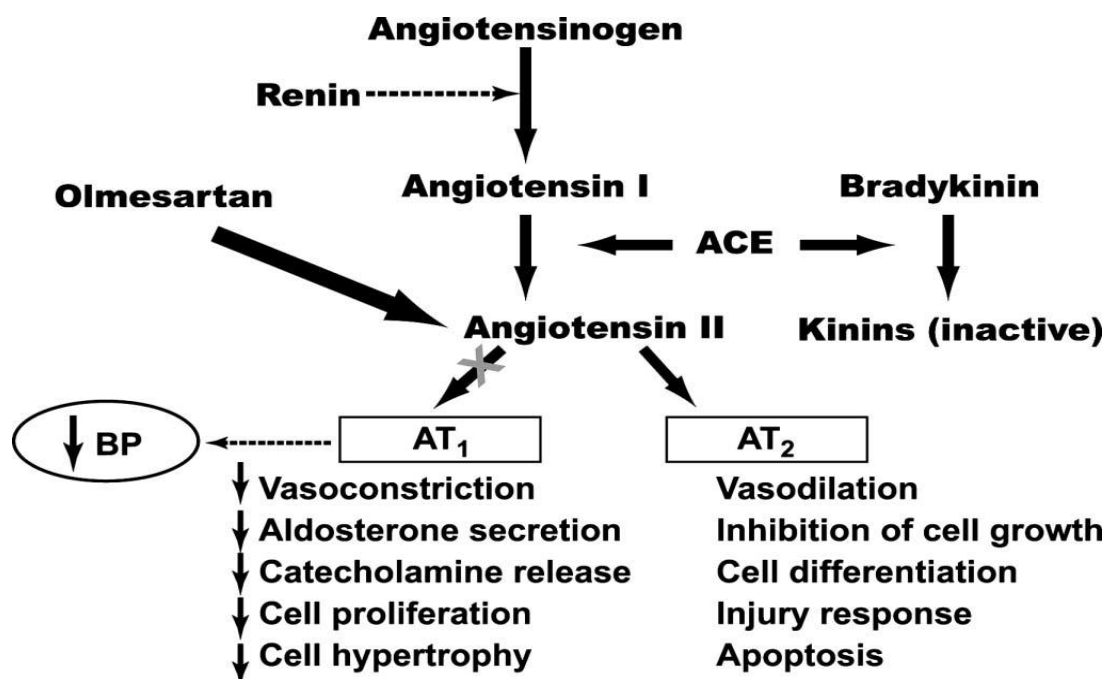


Fig-1.

The antihypertensive mechanism of angiotensive receptor blockers (ARBs). In this diagram renal release of catalyzes the conversion of the angiotensinogen to angiotensin I (A-I). A- I that converted to angiotensin II by circulating & pulmonary angiotensin converting enzyme (ACE). A-II produces of multifunction like vasoconstriction, release of aldosterone by the adrenal cortex or catecholamine release by the activating angiotensin (AT₁) receptors on the vascular smooth muscle. Olmesartan give antihypertensive activity.^[6,7]

In the replacement of the amino acid residue, the peptide antagonists saralasin & sarmesin synthesized.^[8,9]

STRUCTURE ACTIVITY RELATIONSHIP

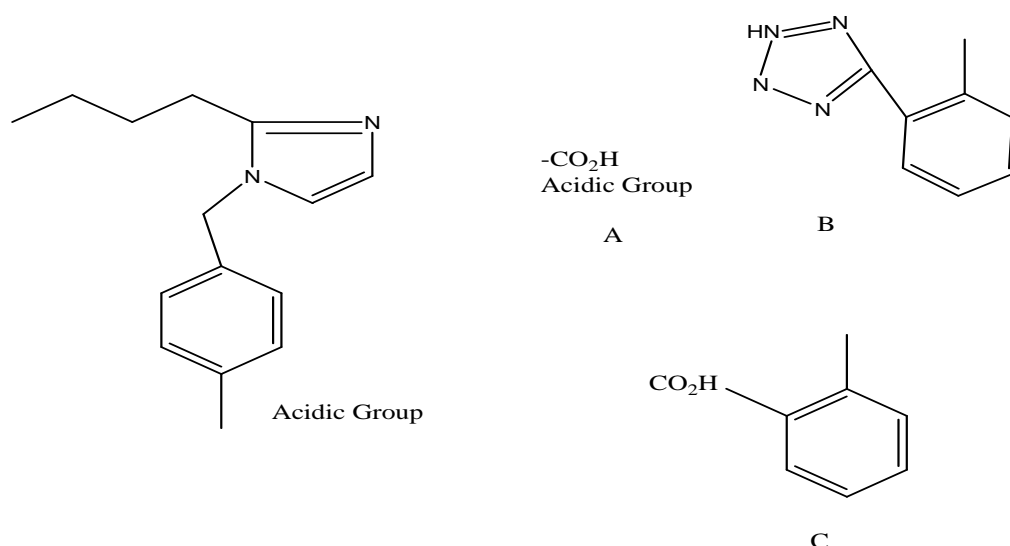


Fig-2.

- 1- The acidic is mimic either the Tyr₄ phenol or the Asp₁ carboxylate of angiotensin II. Groups have role in carboxylic acid (A), phenyl tetrazole (B), or phenyl carboxylate (C).
- 2- In the biphenyl series, the tetrazole & carboxylate groups should be in the ortho position for optimal activity.
- 3- The n- butyl group of the model compound provide the hydrophobic binding & also likely, mimics the side chain of Ile₅ of angiotensin II. In case of the candesartan, telmisartan & olmisartan, this n- butyl group which can be replaced with ethyl ether or n-propyl group.
- 4- The imidazole ring or an isosteric equivalent was required to mimic the His₆ side chain of angiotensin II.
- 5- Substitution can done in the R position. In R group can include a carboxylic acid, a hydroxyethyl group, a ketone, or a benzimidazole ring are present.

Pharmacokinetic Properties

An *In Vitro* Binding Profile of Olmesartan on AT₁ Receptors

The inhibitory effect of olmesartan on A-II binding is compared with related ARBs from data obtained using bovine adrenal cortex membrane that express AT₁ receptor & bovine cellular membranes which express AT₂ receptor.^[7] Adrenal cortex membrane is incubated with [¹²⁵I] A-II {20 fmol} & increasing concentration of olmesartan. The binding of [¹²⁵I] A-II to cell membrane is quantified using a radioreceptor assay. The concentration of olmesartan required to produce 50% inhibition of [¹²⁵I] A-II binding (IC₅₀) to that AT₁ receptor in the adrenal cortex was 7.7 nM. An examination studies show that the olmesartan bind to the AT₁ with an affinity comparable to those of valsartan & telmisartan but 2.0 fold greater than that of candesartan^[10] [table -2]. Olmesartan showed that no antagonistic activity on AT₂ receptor in that membrane has >100,000 nM or > 12,500 times less than that for the AT₁ receptor.

TISSUE – BINDING PROPERTIES: OLMESARTAN AND RELATED ARBS

It showed no inhibitory activity on the contractile response of vascular tissue at that point depolarizing agents such as potassium chloride or receptor specific agonist such as potassium chloride or receptor specific agonist such as norepinephrine have used in the rabbit aortic preparation or histamine induced contraction in guinea pig tissue.^[7]

Olmesartan, pharmacological activity was assessed & showed a greater potency than that of other ARBs at that point data had compared from similar studies {Table- 3}.^[7,11-13]

In the figure – 3 showed that olmesartan antagonist the A-II induced contraction of the isolated guinea pig aortas in a concentration – dependent manner.

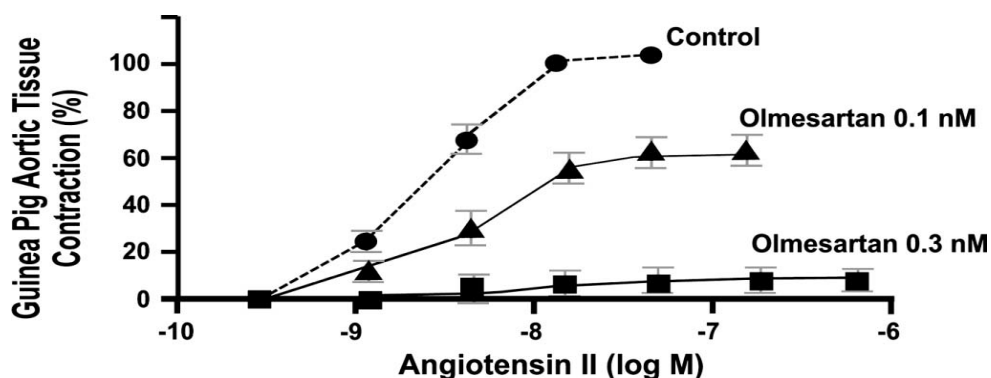


Fig 3: olmesartan antagonist the A-II induced contraction of the isolated guinea pig aortas in a concentration – dependent manner.

Antihypertensive Efficacy: *In Vivo* Animal Models

Inhibition of A-II – Mediated Pressor Response: Activation of AT₁ receptors by exogenous (intravenous) administration of A- II elicits a pressor response. This table is to be taken by the David Mire et al.^[10]

Table 1: The Inhibitory Effect of ARBs to A-II Pressor Responses *In Vivo*.

	Inhibitory Of A- II Pressor Response	
ARB	ED₅₀ (mg/kg)	Relative Olmesartan Potency
Olmesartan	0.0079	-
Candesartan	0.03	3.8
Eprosartan	0.10	13
Telmisartan	0.10	13
EXP – 3174 (losartan active metabolite)	0.27 *	34
Irbesartan	0.45	57
Losartan Potassium	0.70	89
Valsartan	10Ψ	N/A

*An anesthetized pithed rat model was used. Other studies used conscious or anesthetized animals.

Ψ Only an oral ED₁₀ value could be determined in pithed, anesthetized rats.

List 1: Different Marketed Product Price List of Olmesartan In India.

S. No	Brand Name	Combination Generics	Manufacturers	Type	Price Category
1	Olbet -CT (20mg/12.5m)	Olmesartan 20mg + Chlorthalidone 12.5mg	Zuventus	Tablet	78/10 Angiotensin II Tablet Antagonist
2	Olbet -CT (40mg/12.5mg)	Olmesartan 40mg + Chlorthalidone 12.5mg	Zuventus Healthcare Ltd.	Tablet	139/10 Angiotensin II Tablet Antagonist
3	Olmax -H	Olmesartan Medoxomi, Hydrochlorothiazide	Glenmark Pharmaceuticals Ltd. (Healtheon)	Tablet	72/10 Tablet
4	Olmevast -H	Olmesartan Medoxomi, Hydrochlorothiazide	Intra Labs	Tablet	85/10 Tablet
5	Olmesafe AM	OlmesartanMedoxomil, Amlodipine	Aristo Pharmaceuticals Pvt Ltd. (Otsira)	Tablet	69/10 Tablet
6	Olmesafe H	Olmesartan Medoxomil, Hydrochlorothiazide	Aristo Pharmaceuticals Pvt Ltd. (Otsira)	Tablet	99.34/10 Tablet
7	Olmesafe -H	Olmesartan Medoxomil Hydrochlorothiazide	Aristo Pharmaceuticals Pvt Ltd. (Otsira)	Tablet	59.38/10 Tablet
8	Olmesar -A	OlmesartanMedoxomil, Amlodipine	Macleods Pharmaceuticals Pvt Ltd.	Tablet	-

9	Olmesar -CH (20mg/12.5mg)	Olmesartan 20mg + Chlorthalidone 12.5mg	Macleods (Procure CV)	Tablet	-
10	Olmesar -CH (40mg/12.5mg)	Olmesartan 40mg + Chlorthalidone 12.5mg	Macleods (Procure CV)	Tablet	-
11	Olmesar -CH LS (20mg/6.25mg)	Olmesartan 20mg + Chlorthalidone 6.25mg	Macleods (Procure CV)	Tablet	-
12	Olmesar -CH LS (40mg/6.25mg)	Olmesartan 40mg + Chlorthalidone 6.25mg	Macleods (Procure CV)	Tablet	-
13	Olmesar H	OlmesartanMedoxomil, Hydrochlorothiazide	Macleods Pharmaceuticals Pvt Ltd.	Tablet	-
14	Olmesar- H(40mg)	OlmesartanMedoxomil, Hydrochlorothiazide	Macleods Pharmaceuticals Pvt Ltd.	Tablet	-
15	Olmesar -M (20mg/25mg)	Olmesartan 20mg + Metoprolol Succinate (ER) 25mg	Macleods (Procure CV)	Tablet	-
16	Olmesar -M (20mg/50mg)	Olmesartan 20mg + Metoprolol Succinate (ER) 50mg	Macleods (Procure CV)	Tablet	-
17	Olmesar-A (5mg/40mg)	Amlodipine 5mg+ Olmesartan 40mg	Macleods(Procure CV)	Tablet	-
18	Olmesar-AV (20mg/10mg)	Olmesartan 20mg + Atorvastatin 10mg	Macleods Pharmaceutical Pvt Ltd.	Tablet	-
19	Olmetime -AM (20mg/5mg)	Olmesartan 20mg + Amlodipine 5mg	Mankind	Tablet	-
20	Olmetime -AM (40mg/5mg)	Olmesartan 40mg + Amlodipine 5mg	Mankind	Tablet	-
21	Olmetime-AMH (20mg/5mg/12.5 mg)	Olmesartan 20mg + Amlodipine 5mg + Hydrochlorothiazide 12.5mg	Mankind	Tablet	-
22	Olmetime-H (20mg/12.5mg)	Olmesartan 20mg + Hydrochlorothiazide 12.5mg	Mankind	Tablet	-
23	Olmetime-H (40mg/12.5mg)	Olmesartan 40mg + Hydrochlorothiazide 12.5mg	Mankind	Tablet	-
24	Olmetor -H	OlmesartanMedoxomil, Hydrochlorothiazide	Delta Aromatics Pvt Ltd	Tablet	-
25	Olmezest -H	OlmesartanMedoxomil, Hydrochlorothiazide	Sun Rise International Labs Ltd.	Tablet	-
26	Olmiwall -H (20mg/12.5mg)	Olmesartan 20mg + Hydrochlorothiazide 12.5mg	World wide	Tablet	-
27	Olmy -A	Olmesartan Medoxomil, Amlodipine	ZydusCadila Healthcare Ltd (CND)	Tablet	-
28	Olmy -H	OlmesartanMedoxomil,	ZydusCadila Healthcare	Tablet	-

		Hydrochlorothiazide	Ltd (CND)		
29	Olmy -H (20mg/12.5mg)	Olmesartan 20mg + Hydrochlorothiazide 12.5mg	Zydus (CND)	Tablet	-
30	Olmy -H (40mg/12.5mg)	Olmesartan 40mg + Hydrochlorothiazide 12.5mg	ZydusCadela Healthcare Ltd. (CND)	Tablet	-
31	Olmy -H Tab	OlmesartanMedoxomil, Hydrochlorothiazide	Zydus (CND)	Tablet	-
32	Olmy R	OlmesartanMedoxomil, Ramipril	ZydusCadila Healthcare Ltd (CND)	Tablet	-
33	Olmy-A (5mg/20mg)	Amlodipine 5mg+ Olmesartan 20mg	Zydus(CND)	Tablet	-
34	Olmy-R (5mg/20mg)	Ramipril 5mg+ Olmesartan 20mg	Zydus(CND)	Tablet	-
35	Olsar A	OlmesartanMedoxomil, Amlodipine	Unichem Laboratories Ltd.	Tablet	-
36	Olsar H	OlmesartanMedoxomil, Hydrochlorothiazide	Unichem Laboratories Ltd.	Tablet	-
37	Olsar -H-40	OlmesartanMedoxomil, Hydrochlorothiazide	Unichem Laboratories Ltd.	Tablet	-
38	Pinom A	OlmesartanMedoxomil, Amlodipine	Lupin Laboratories Ltd. (Pinnacle)	Tablet	-
39	Pinom H	OlmesartanMedoxomil, Hydrochlorothiazide	Lupin Laboratories Ltd. (Pinnacle)	Tablet	-
40	Trinexovas (10mg/20mg/12.5mg)	Cilnidipine 10mg+ Olmesartan 20mg+ Chlortalidone 12.5mg	Macleods(Procure CV)	Tablet	-
41	Trinexovas (10mg/40mg/12.5mg)	Cilnidipine 10mg+ Olmesartan 40mg+ Chlortalidone 12.5mg	Macleods Pharmaceutical Ltd. (Procure CV)	Tablet	-
42	Triolmesar - CH (20mg/5mg/12.5mg)	Olmesartan 20mg + Amlodipine 5 mg + Chlortalidone 12.5mg	Macleods (Procure CV)	Tablet	-
43	Triolmesar - CH (20mg/5mg/12.5mg)	Olmesartan 20mg + Amlodipine 5mg + Chlortalidone 12.5mg	Macleods (Procure CV)	Tablet	-
44	Triolmesar(20mg /5mg /12.5mg)	Olmesartan 20mg + Amlodipine 5mg + Hydrochlorthiazide 12.5mg	Macleods (Procure CV)	Tablet	-
45	Triolmesar (40mg/5mg/12.5mg)	Olmesartan 40mg + Amlodipine 5 mg + Hydrochlorothiazide 12.5mg	Macleods (Procure CV)	Tablet	-
46	Win-BP H	OlmesartanMedoxomil, Hydrochlorothiazide	Piramal Healthcare	Tablet	-

Post Marketing Surveillance of Olmesartan Drug

In the post marketing survey of Olmesartan Drug given by the A. Trailokya *et al*, details are as follow.

The patients of (> 18 years) of either sex, with have essential hypertension or hypertension with co-morbidities like angina, diabetes mellitus, dyslipidemia or mild to moderate heart failure are to be include In this study. And also include the patient whose BP is not controlled with single antihypertensive agent. Some patient which are not to be include in this study like – Pregnant & lactating women, patient with history of hypersensitivity to olmesartan, those have cardiac failure, stenosis, renal artery, chronic renal failure, clinically significant hepatic or renal impairment, chronic venous, insufficiency, varicose veins associated with edema or any significant uncontrolled illness.^[14]

The Dose of the olmesartan is to be taken as 20 mg/ 40 mg tablet once daily for six months, after satisfying written informed. The primary outcomes of the study is reduced in systolic BP (SBP) to < 140 mmHg & diastolic BP (DBP) to < 90 mmHg at 3 & 6 months of treatment with olmesartan.^[14]

The result of the different analysis come

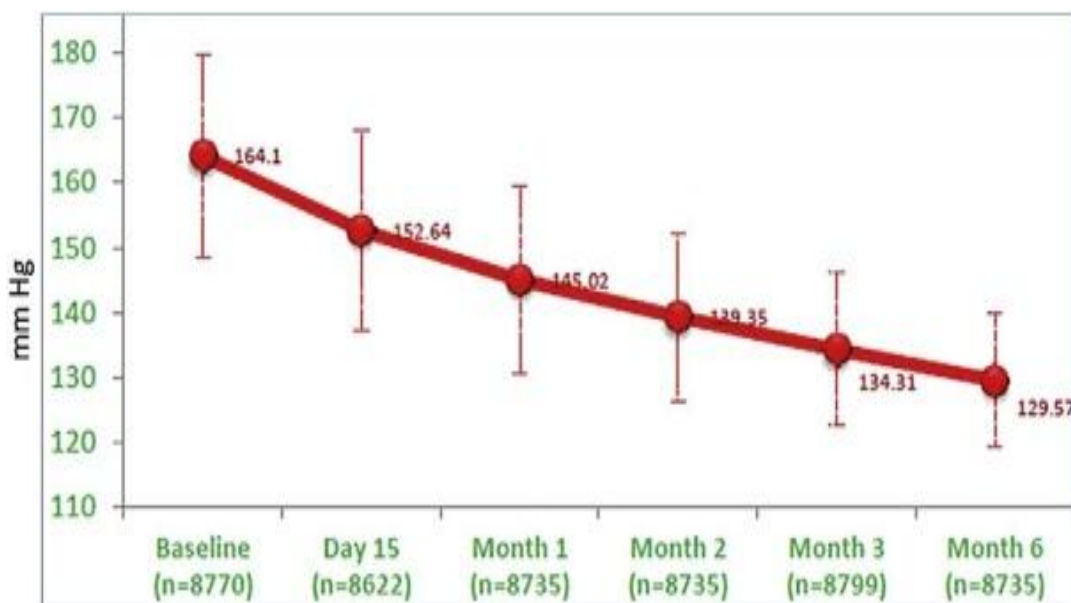


Fig 4: It describe the reduction of the systolic blood pressure.



Fig 5: It describe the reduction of the diastolic blood pressure.

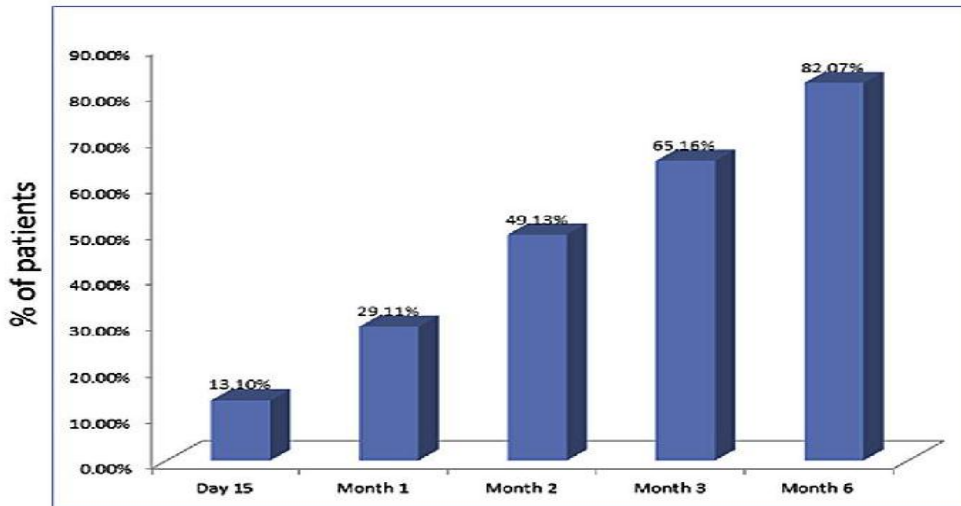


Fig 6: It describe the respond to the systolic blood pressure.

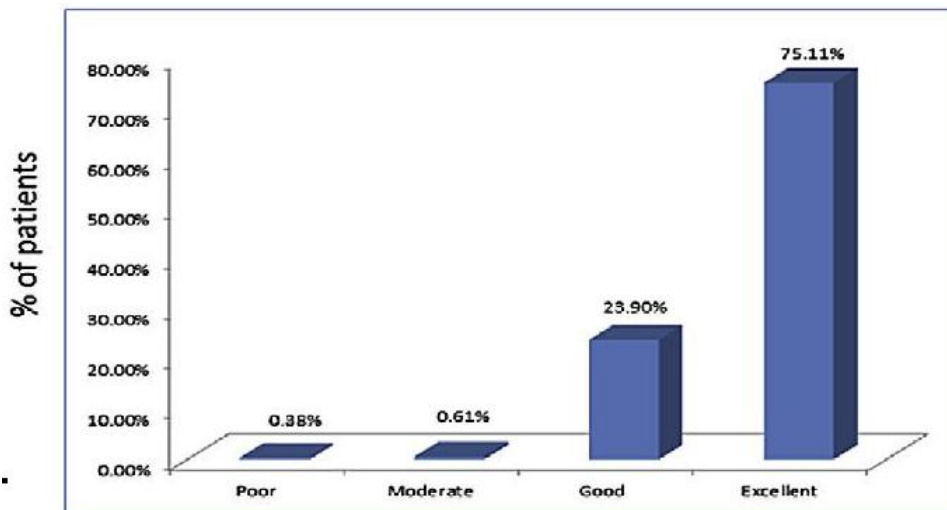


Fig 7: Global assessment of response to therapy by patients at 6 months (n = 8788).

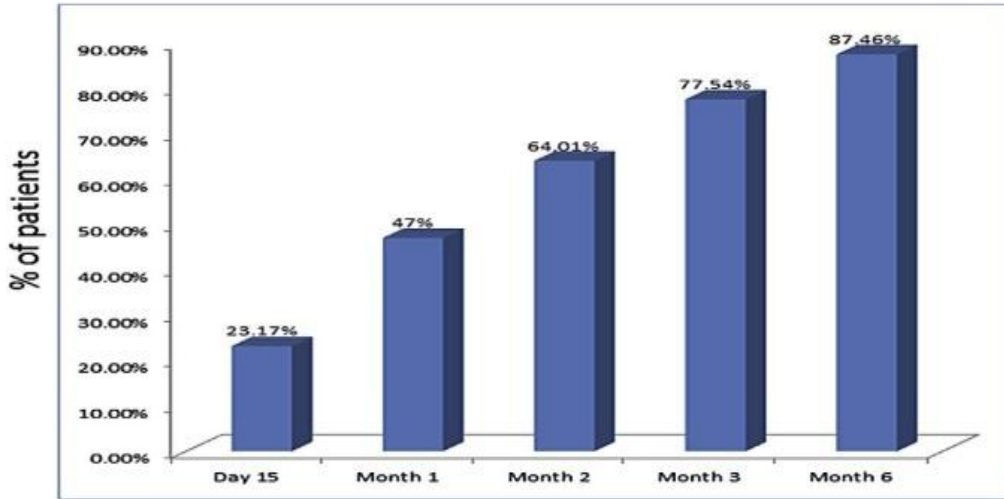


Fig 8: Responders for the diastolic blood pressure.

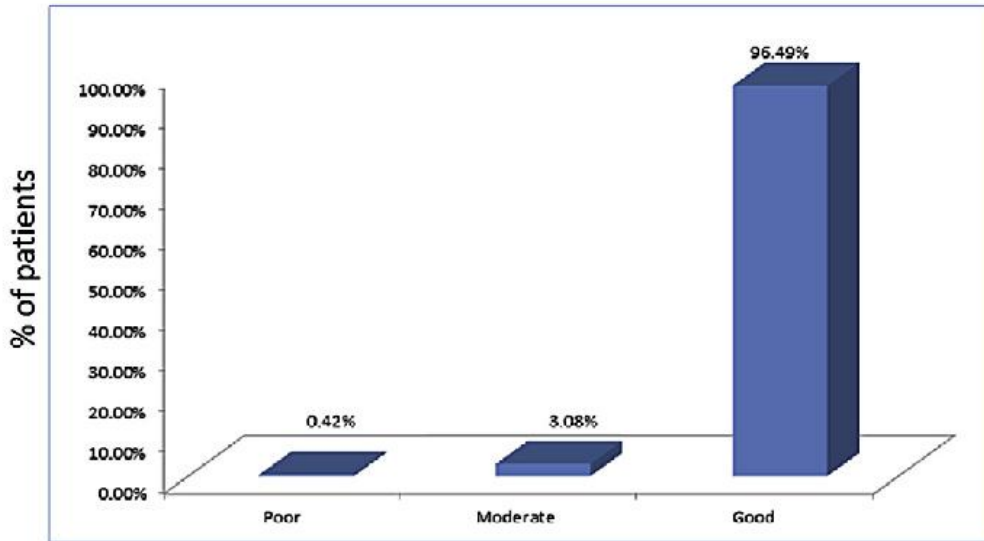


Fig 9: Global assessment of tolerability by patients at 6 months (n= 8804).

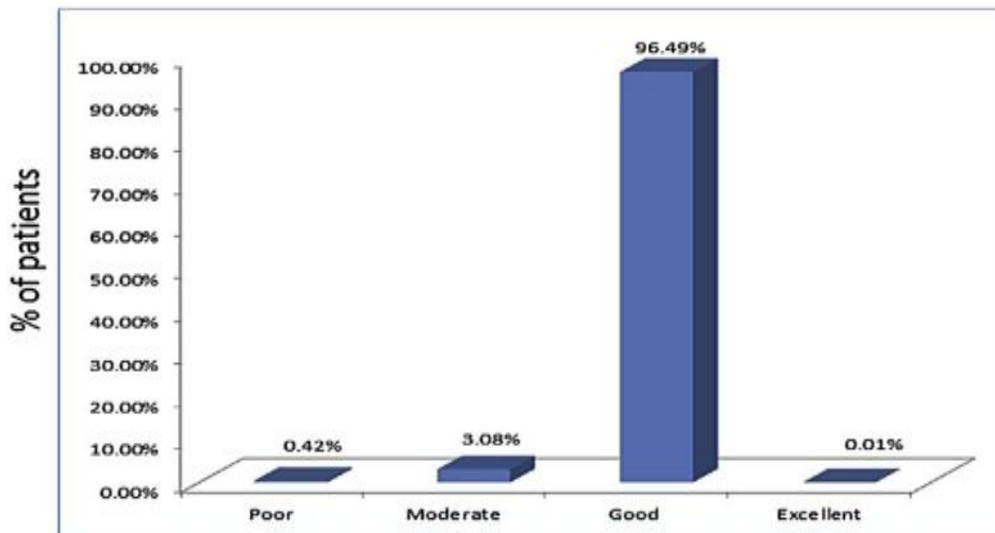


Fig 10: Global assessment of response to therapy by doctors at 6 months (n= 8804).

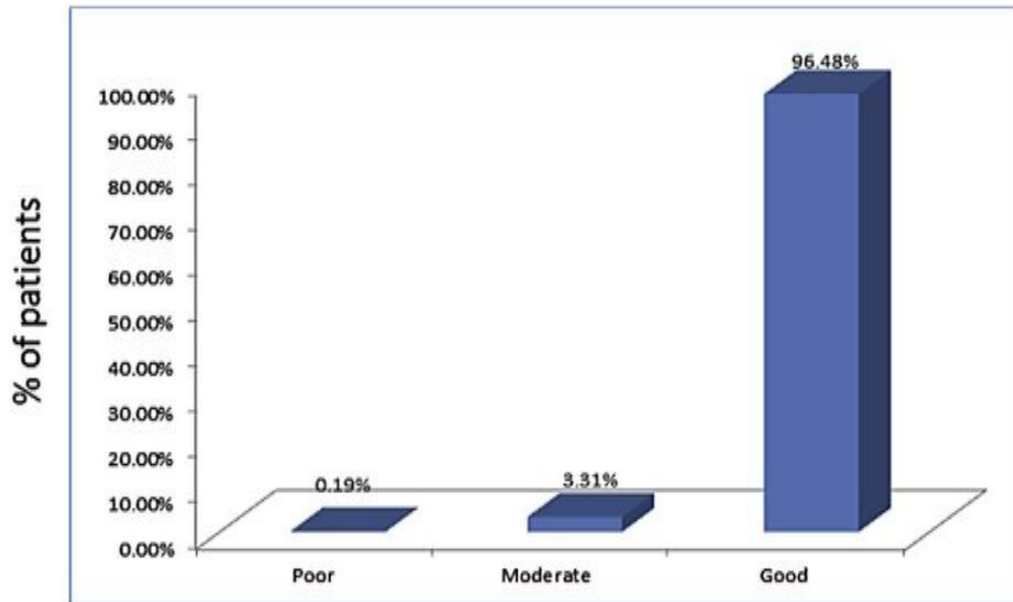


Fig 11: Global assessment of tolerability by doctors at 6 months (n= 8818).

Table 2: Baseline Characteristics.

Parameters	N	Mean (SD)
Age (years)	8931	53.26 (10.34)
Height (cm)	4628	164.2 (9.74)
Weight (Kg)	7196	69.98 (18.63)

Table 3: Incidents of adverse events (n= 8940).

Adverse events	Percentage of Patients
Edema	0.05%
Uncontrolled hypertension	0.03%
Dizziness	0.03%
Vertigo	0.03%

The conclusion come for this study come is the post marketing real world study demonstrated the efficacy & safety of olmesartan 20 mg / 40 mg in Indian adult patients with hypertension, making olmesartan an effective & well tolerated suitable treatment option for both newly diagnosed patients as well as for patients whose BP is not adequately controlled with other antihypertensive agents.^[14]

Different Brand Names of Olmesartan in All Over the world.

S.N.	Product Name	Country	Description
1.	Abecab (Olmesartan Medoxomil & Amlodipine)	Bangladesh	ACI
2.	Abetis	Bangladesh	ACI
3.	Abetis Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Bangladesh	ACI
4.	Alea (Olmesartan Medoxomil & Amlodipine)	Berlin, Norway, Denmark,	-
5.	Almetec	Mexico	Schering- Plough
6.	Almetec – Co (Olmesartan Medoxomil & Hydrochloride)	Mexico	Schering- Plough
7.	Alteis	France	Menarini
8.	Alteisduo (Olmesartan Medoxomil & Hydrochlorothiazide)	France	Menarini
9.	Alzor	Philippines	Ajanta Pharma Phil
10.	Alzor CCB (Olmesartan Medoxomil & Amlodipine)	Philippines	Ajanta Pharma Phil
11.	Alzor HCT (Olmesartan Medoxomil & Hydrochlorothiazide)	Philippines	Ajanta Pharma Phil
12.	Amelior plus HCT (Olmesartan Medoxomil & Amlodipines + Hydrochlorothiazide)	Austria	Menarini International Operations
13.	Amelior (Olmesartan Medoxomil and Amlodipine)	Austria	Menarini International Operations
14.	Amlosart (Olmesartan Medoxomil & Amlodipine)	Bangladesh	Square
15.	Angiosartan	Egypt	Chemi ph
16.	Angiosartan Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Egypt	Chemi ph
17.	Arb – S	Sourth Korea	Samjin
18.	Arb – SD (Olmesartan Medoxomil & Hydrochlorothiazide)	South Korea	Samjin
19.	Axeler (Olmesartan Medoxomil & Amlodipine)	France	Menarini
20.	Azor (Olmesartan Medoxomil & Amlodipine)	United State	Daiicyo Sankyo
21.	Azoren (Olmesartan Medoxomil & Amlodipine)	Singarapore	Pfizer, Malaysia
22.	Balzak (Olmesartan Medoxomil & Amlodipine)	Spain	Laboratories Menarini
23.	Balzak Plus (Olmesartan	Spain	Laboratorios

	Medoxomil & Amlodipine, + Hydrochlorothiazide)		
24.	Baritec	Pakistan	Barrett Hodgson
25.	Belfor (Olmesartan Medoxomil & Amlodipine + Hydrochlorothiazide)	Netherlands	Menarini
26.	Belfor HCT (Olmesartan Medoxomil & Amlodipine + Hydrochlorothiazide)	Netherlands	Menarini
27.	Belsar Plus (Olmesartan & Hydrochlorothiazide)	Belgium	Menarini
28.	Belsar	Belgium	Menarini
29.	Benetor	Ireland, Denmark, Finland, Norway	Menarini, Daiichi Sankyo
30.	Benetor Comp. (Olmesartan Medoxomil & Hydrochlorothiazide)	Finland, Norway, finland, Denmark	Menarini
31.	Benetor Plus (Olmesarten Medoxomil & Hydrochlorothiazide)	Ireland	Daiichi Sankyo
32.	Benicar	United State	Duaiichi Sankyo, Menarini, Costa Rica,
33.	Menarini, Nicaragua	Brazil,	Menarini, Panama, El Salvador, Pfizer, Sankyo, Venezuela
34.	Benicar Amlo (Olmesartan Medoxomil & Amlodipine)	Panama, Costa -Rica	Guatemala, Honduras
35.	Salvador	United State, Costa Rica,	Benicar HCT (Olmesartan Medoxomil & Hydrochlorothiazide)
36.	Menarini, Nicaragua	Panama	Menarini, El Salvador
37.	Bivis (Olmesartan Medoxomil & Amlodipine)	Italy	Menarini, International - L
38.	Bizoran (Olmesartan Medoxomil & Amlodipine)	Bangladesh	Beximco
39.	Capenon (Olmesartan Medoxomil & Amlodipine)	Netherlands, Spain	Daiichi Sankyo, Pfizer
40.	Capenon HCT (Olmesartan Medoxomil & Amlodipine, + Hydrochlorothiazide)	Spain, Netherlands	Daiichi Sankyo
41.	Cardioplus	Chile	Cardiopharm, Peru, Farminustria
42.	Cardioplus AM (Olmesartan Medoxomil & Amlodipine)	Chile	Cardiopharm
43.	Cardioplus AMD (Olmesartan Medoxomil 7Hydrochlorothiazide + Amlodipine)	Chile	Cardiopharm
44.	Cardioplus D (Olmesartan	Chile	Peru, Cardiopharm,

	Medoxomil & Hydrochlorothiazide)		Farindustria
45.	Co- Olimestra (Olmesartan Medoxomil & Hydrochlorothiazide)	Poland,	Keke, Bulgaria
46.	Co Olmetec (Olmesartan Medoxomil & Hydrochlorothiazide)	France	Daiichi Sankyo
47.	Co- Olmetec (Olmesartan Medoxomil & Hydrochlorothiazide)	Tunisia	Daiichi Sankyo
48.	Cresart	Philippines	SANDOZ
49.	Culmi	India	Cubit
50.	Culmi –H (Olmesartan Medoxomil & Hydrochlorothiazide)	India	Cubit
51.	Disartan (Olmesartan Medoxomil & Amlodipine)	Bangladesh	Drug International
52.	Duactan (Olmesartan Medoxomil & Amlodipine)	Hungary	Menarini International Operationa Luxembourg S..A.
53.	Duoalmetac (Olmesartan Medoxomil & Amlodipine)	Mexico	Schering - Plough
54.	Elestar (Olmesartan Medoxomil & Amlodipine)	Poland	Menarini
55.	Erastapex	Egypt	Apex
56.	Erastapex Plus (Olmesartan Menoxodil & Hydrochlorothiazide)	Egypt	Apex
57.	Folgan (Olmesartan Medoxomil & Amlodipine)	Berlin – Chemie	Slovakia
58.	Forzaten (Olmesartan Medoxomil & Amlodipine)	Itlay, Belgium	Giant (Olmesartan Medoxomil & Amlodipine Amlodipine) Menarini International -L
59.	Hipersar	Turkey	UFSA
60.	Hipersar –Plus (Olmesartan Medoxomil & Hydrocholothiazide)	Turkey	UFSA
61.	Iltux	Costa Rica	Asofarma, Asofarma, Guatemala
62.	Iltux HCT (Olmesartan Medoxomil & Hydrochlorothiazide)	Costa Rica	Asofarma, Guatemala, Honduras
63.	Panama, Asofarma, EI	Colombia	Salvador, Tecnofarma, Chile
64.	Improve	Turkey	Abdi Ibrahim
65.	Improve Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Turkey	Abdi Ibrahim

66.	Inovum (Olmesartan Medoxomil & Amlodipine)	Romania	Menarini
67.	Ixia	Spain	Laboratorios Menarini
68.	Ixia Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Spain	Laboratorios Menarini
69.	Konverge (Olmesartan Medoxomil & Amlodipine)	Ireland	Maita, Menarini
70.	Konverge Plus (Olmesartan Medoxomil & Hydrochlorothiazide + Amlodipin)	Ireland	Menarini, Malta
71.	Lan Sha	China	Winsunny Pharmaceuticals
72.	Laresin	Hungary	Menarini International Operations Luxembourg
73.	Laresin Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Hungary	Berlin- Chemie
74.	Lodivikar (Olmesartan Medoxomil & Amlodipine)	South Korea	Hanlim
75.	Medosartan (Olmesartan Medoxomil & Hydrochlorothiazide)	Egypt	Sabaa
76.	Menartan	Serbia	Berlin Chemie, Bosnia & Herzegowina, Berlin -
77. 78.	Mencord Menacord Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Austria. Austria	Chemia Menarini International Operations Menarini International Operations
79.	Mesar	Berlin	Menarini, Estonia, Berlin-Chemia, Latvia, Lithuania,
80.	Mesar Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	-	A. Menarini, Estonia, Menarini, Lithium, Latvia
81.	Nexovas – O (Olmesartan Medoxomil & Cilnidipine)	India	Macleods
82.	Normesar	Egypt	Jedco
83.	Olarbi	Colombia	Sandoz
84.	Normetec (Olmesartan Medoxomil & Amlodipine)	Indonesia, Thailand, Philippines	Pfizer
85.	Olartan (Olmesartan Medoxomil & Hydrochlorothiazide)	Greece	Menarini
86.	Olartan P (pediatric)	Greece	Menarini
87.	Olartan Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Greece	Menarini

88.	Oldren	South Korea	Ilsung
89.	Ole	South Korea	Korea Prime Pharm
90.	Olectan (Olmesartan Medoxomil & Amlodipine)	-	Slovenia
91.	Olgotan	South Korea	Ilyang
92.	Olimestra	Poland	Krke, Bosnia & Herzegovina, Bulgaria, Estonia, Lithuania, Latvia
93.	Olmat	India	Micro Carsyon
94.	Olmat- AM (Olmesartan Medoxomil & Amlodipine)	India	Micro Carsyon
95.	Olmat – AM (Olmesartan Medoxomil & Hydrochlorothiazide)	India	Micro Carsyon
96.	Olmax	India, Glenmark	-
97.	Olmax – AM (Olmesartan Medoxomil & Amlodipine)	India, Glenmark	-
98.	Olmax –H (Olmesartan Medoxomil & Hydrochlorothiazide)	India, Glenmark	-
99.	Olmax – M (Olmesartan Medoxomil & Metoprolol)	India, Glenmark	-
100.	Olmec	Argentina	Phoenix, Phoenix, Georgia
101.	Olmecar	Bangladesh	Square
102.	Olmecar Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Bangladesh	Square
103.	Olmeday	Turkey	Inventim
104.	Olmeday Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Turkey	Inventim
105.	Olmedil	South Korea	Medica Korea,
106.	Olmedipin (OLmesartan Medoxomil & Amlodipine)	Colombia	Synthesis
107.	Olmedix	Bulgaria	Polpharma
108.	Olmedoxlata	-	Sigillata,
109.	Olmegan (Olmesartan Medoxomil & Hydrochlorothiazide)	Italy	Daiichi Sankyo
110.	Olmelife	India	Lifecare
111.	Olmeprex	Colombia	Garmisch
112.	Olmes	-	Menarini, Malta
113.	Olmelife –H (Olmesartan Medoxomil & Hydrochlorothiazide)	India	Lifecare
114.	Olmesan	Bangladesh	Beximco
115.	Olmesan Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Bangladesh	Beximco

116.	Olmesar	India	Macleods
117.	Olmesar –AV (Olmesartan Medoxomil & Atorvastatin)	India	Macleods
118.	Olmesar – CH (Olmesartan Medoxomil & Chlortalidone)	India	Macleods
119.	Olmesar –H (Olmesartan Medoxomil Chlortalidone)	India	Macleods
120.	Olmesar A (Olmesartan Medoxomil & Amlodipine)	India	Macleods
121.	Olmesar – M (Olmesartan Medoxomil & Hydrochlorothiazide)	India	Macleods
122.	Olmesartan Medoxomil ALembic	Netherlands	Alembic
123.	Olmesartan Aurobindo	-	Aurobindo
124.	Olmesartan Medoxomil Apotex	Netherlands	Apotex, Estonia, Apotex
125.	Olmesartan Medoxomil Glenmark	Netherlands	Glenmarks
126.	Olmesartan Medoxomil DOC Generici	-	DOC Generici, Estonia
127.	Olmesartan Medoxomil Jubilant	Netherlands	Jubilant
128.	Olmesartan Medoxomil Mylan	Netherlands	Mylan
129.	Olmesartan Medoxomil Teva	Netherlands, Polands	Teva, Lithuania, Teva Pharmaceutical
130.	Olmesartan Medoxomil/ Hydrochlorothiazide Teva (Olmesartan Medoxomil & Hydrochlorothiazide)	-	Teva, Estonia
131.	Olmesartan Medoxomil/ Hydrochlorothiazide Teva (Olmesartan Medoxomil & Hydrochlorothiazide)	-	Lithium
132.	Olmesartan Medoxomil, Teva	Portugal	Teva Pharma
133.	Olmesartan M K.	Columbia	M K.
134.	Olmesartan Polpharma	Poland	Polpharma
135.	Olmesartan Sandoz	Hongkong	-
136.	Olmesartan Sigillata	-	Estonia
137.	Olmesartan/ Hydrochlorothiazide Aurobindo (Olmesartan Medoxomil & Hydrochlorothiazide)	-	Aurobindo
138.	Olmesat	India	Biocon
139.	Olmesat- AM (Olmesartan Medoxomil & Amlodipine)	India	Biocon
140.	Olmesat –ID (Olmesartan	India	Biocon

	Medoxomil & Indapamide)		
141.	Olmesta	-	Teva, Bugaria
142.	Olmetan	Colombia	Bussie
143.	Olmesta Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	-	Merckle, Bulgaria
144.	Olmetan H (Olmesartan Medoxomil & Hydrochlorothiazide)	Colombia	Bussie
145.	Olmetec	Finland, Italy, Austria, Taiwan, Netherlands, Switzerland, Japan, Taiwan, Belgium, France	Daiichi Sankyo, Daiichi Sankyo UK
146.	Olmetec Amlo (Olmesartan Medoxomil & Amlodipine)	-	Merck Sharp & Dohme, Chile
147.	Olmetec Comp (Olmesartan Medoxomil & Hydrochlorothiazide)	Norway	Daiiiche Sankyo
148.	Olmetec D (Olmesartan Medoxomil & Hydrochlorothiazide)	Argentina	Schering -Plough
149.	Olmetec HCT (Olmesartan Medoxomil & Hydrochlorothiazide)	-	Ecuador
150.	Olmetec HCTZ (Olmesartan Medoxomil & Hydrochlorothiazide)	Netherlands	Daiichi Sankyo, Euro Registratie, Fisher Farma, Medcor
151.	Olmetec P (Pediatric)	Greece	Pfizer
152.	Olmetec Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	Switzerland, Belgium, Finland, China	Daiichi Sankyo,
153.	Daiichi Sankyo	Taiwan, Austria, United Kingdom	Daiichi Sankyo,
154.	Portugal; Menarini, Lithuania	Portugal	MSD, Costa Rica, MSD, Dominican Republic, Guatemala
155.	Philippines, Takeda Pharma	Denmark, Spain, Canada, Australia, Thailand, Singapore	Merck Sharp & Dohme, Chile, Pfizer
156.	Olmetecamlo (Olmesartan Medoxomil & Amlodipine)	-	MSD, Guatemala, Honduras
157.	Olmetel	South Korea	Sungwon
158.	Olmetec (Olmesartan Medoxomil & Hydrochlorothiazide)	Bangladesh	Drug International
159.	Olmetime -AM (Olmesartan Medoxomil & Amlodipine)	India	Mankind

160.	Olmesartan –H (Olmesartan Medoxomil &Hydrochlorothiazide)	India	Mankind
161.	Olmexetil –M (Olmesartan Medoxomil &Hydrochlorothiazide)	India	Mankind
162.	Olmezar	Philippines	OEP Phils
163.	Olmezar Plus (Olmezar Medoxomil & Hydrochlorothiazide)	Philippines	OEP Phils
164.	Olmezest	India	Sun
165.	Olmezest –H (Olmesartan Medoxomil & Hydrochlorothiazide)	India	Sun
166.	Olmi	Myanmar	Zydus Cadila
167.	Olmicombi (Olmesartan Medoxomil & Hydrochlorothiazide)	Slovenia	KRKA
168.	Olmistra	India	Fenestra
169.	Olmy-A (Olmesartan Medoxomil & Hydrochlorothiazide)	India	Zydus
170.	Olmy –H (Olmesartan Medoxomil &Amlodipine)	India	Zydus
171.	Olmy	India	Zydus
172.	Olmy- R (Olmesartan Medoxomil &Ramipril)	India	Zydus
173.	Olmysar	Turkey	Bilim
174.	Olpress	Italy	Malesci
175.	Olpressor	-	Sandoz, Lithium
176.	Olprezide (Olmesartan Medoxomil & Hydrochlorothiazide)	Italy	Malesci
177.	Olsar	India	Menarini, Portugal
178.	Olsar Plus (Olsar A)	India	Unichem, India Olmesartan Medoxomil &Hydrochlorothiazide
179.	A. Menarini, Portugal	India	Olsar – H (Olmesartan Medoxomil & Hydrochlorothiazide Unichem
180.	Olsar- M (Olmesartan Medoxomil &Metoprolol)	India	Unichem
181.	Olsart	Bangladesh	Opsonin
182.	Olsart (Olmesartan Medoxomil & Hydrochlorothiazide)	Bangladesh	Opsonin
183.	Olsartan	South Korea	Dong – A
184.	Olsartan Plus (Olmesartan Medoxomil &	South Korea	Dong – A

	Hydrochlorothiazide)		
185.	Olsart – HZ (Olmesartan Medoxomil & Hydrochlorothiazide)	Bengladesh	Opsonin
186.	Oltamax	South Korea	Hanlim
187.	Oltamax Plus (Olmesartan Medoxomil & Hydrochlorothiazide)	South Korea	Hanlim
188.	Oltan	-	ITF – Labomed Farmaceutics
189.	Oltan Amlo 20/10 (Olmesartan Medoxomil & Amlodipine)	-	ITF – Labomed Farmaceutics, Chile
190.	Oltan Amlo 40/10 (Olmesartan Medoxomil & Amlodipine)	-	ITF – Labomed Farmaceutics, Chile
191.	Oltan Amlo 40/5	-	ITF – Labomed Farmaceutics, Chile
192.	Oltan D	-	ITF - Labomed Farmaceutica,
193.	Olwinner	South Korea	Daehwa Pharmaceutical
194.	Omertec	South Korea	Shin Poong,
195.	Omesar	Ireland	A. Menarini,
196.	Omesar Plus	Ireland	A. Menarini, Menarini, Malta
197.	Omten	India	Johnlee
198.	Openvas	Spain	Pfizer
199.	Openvas Plus	Spain	Pfizer
200.	Orizal (Olmesartan Medoxomil and Amlodipine)	Greece	Menarini
201.	Osaver	-	Zentiva, Lithuania; Zentiva, Latvia
202.	Osaver HCT	-	Zentiva, Lithuania; Zentiva, Latvia
203.	Pinom	India	Lupin
204.	Pinom-A	India	Lupin
205.	Pinom-H (Olmesartan Medoxomil and Hydrochlorothiazide)	India	Lupin
206.	Plaunac	Italy	Guidotti
	Plaunazide (Olmesartan		
207.	Medoxomil and Hydrochlorothiazide)	Italy	Guidotti
208.	Revival	Poland	Guidotti
209.	Revival Plus	Poland	Guidotti
210.	Rezaltas HD	Japan	Daiichi Sankyo
211.	Rezaltas LD	Japan	Daiichi Sankyo
212.	Rolmex-AM (Olmesartan Medoxomil and Amlodipine)	India	Race Pharmaceuticals
213.	Sanoral (Olmesartan Medoxomil and Amlodipine)	Berlin	A. Menarini, Estonia; Berlin-Chemie, Latvia; Lithuania
214.	Sanoral HCT (Olmesartan	-	A. Menarini, Estonia

	Medoxomil and Amlodipine, + Hydrochlorothiazide)		
215.	Santini	Romania	Berlin-Chemie
216.	Sarten	-	Menarini
217.	Sevikar (Olmesartan Medoxomil and Amlodipine)	Belgium, Finland Switzerland, Spain,	Daiichi Sankyo, Daiichi Sankyo, Daiichi Sankyo, Daiichi Sankyo
218.	Daiichi Sankyo, France	France, Italy, Netherlands, Tunisia	Daiichi Sankyo, Daiichi Sankyo, Daiichi Sankyo, Daiichi Sankyo,
219.	Daiichi Sankyo Austria,	Austria, United Kingdom, Netherlands	Daiichi-Sankyo, Portugal, Euro Registratie, Daiichi Sankyo UK
220.	Fisher Farma	Netherlands, Australi, Greece.	Medcor, Merck Sharp & Dohme, Pfizer,
221.	SEVIKAR	Germany, Romania	Sankyo, Terapia,
222.	Sevikar HCT	Germany, Spain,	Daiichi Sankyo
223.	Netherlands; Daiichi Sankyo	Austria, United Kingdom	Daiichi Sankyo UK, Medcor, Pfizer,
224.	Seviloten (Olmesartan Medoxomil and Amlodipine)	South Korea	Medica Korea
225.	Sevisartan (Olmesartan Medoxomil and Amlodipine)	South Korea	Dong-A
226.	Sevitec (Olmesartan Medoxomil and Amlodipine)	South Korea	Kukje
227.	Tensar	Berlin	Berlin-Chemie, Bulgaria
228.	Tensonit	Argentina	-
229.	Tenzar	-	Berlin-Chemie, Slovakia
230.	Tenzar Plus (Olmesartan Medoxomil)	-	Berlin-Chemie, Slovakia
231.	Tespadan (Olmesartan Medoxomil and Amlodipine)	-	Berlin-Chemie, Bulgaria
232.	Vascord	Switzerland	Menarini
233.	Vascord HCT (Olmesartan Medoxomil and Amlodipine, + Hydrochlorothiazide)	Switzerland	Menarini
234.	Vivactra	-	Bulgaria; Actavis Baltics Eesti, Estonia
235.	Vivactra Plus (Olmesartan Medoxomil and Hydrochlorothiazide)	-	Actavis Baltics Eesti, Estonia
236.	Vocado (Olmesartan Medoxomil and Amlodipine)	-	Berlin-Chemie, Vocado
237.	Votum	Germany, Switzerland	Berlin-Chemie
238.	Votum plus	Germany, Switzerland	Berlin-Chemie,
239.	Win-BP	India	AHPL
240.	Win-BP-H	India	AHPL

241.	Xyotil	Bangladesh	Incepta
242.	Xyotil (Olmesartan Medoxomil and Hydrochlorothiazide)	Bangladesh	Incepta
243.	Zolnor (Olmesartan Medoxomil and Amlodipine)	-	A. Menarini, Portuga

Foreign Names

- Olmesartanum medoxomilum (Latin)
- Olmesartan-Medoxomil (German)
- Olmésartan médoxomil (French)
- Olmesartàn medoxomilo (Spanish)

Generic Names

- Olmesartan Medoxomil (OS: BANM, USAN, JAN)
- Benevas (IS: Sankyo)
- CS 866 (IS: Sankyo)
- Olmesartan Medoxomil (PH: BP 2016, JP XVI, USP 38)
- Olmesartan medoxomil (PH: Ph. Eur. 8)
- Olmésartan médoxomil (PH: Ph. Eur. 8)
- Olmesartan-Medoxomil (PH: Ph. Eur. 8)
- Olmesartanum medoxomilum (PH: Ph. Eur. 8)^[15]

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