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A REVIEW ON ANALYTICAL METHOD FOR DETERMINATION OF ANGIOTENSIN II-RECEPTOR ANTAGONISTS IN DIFFERENT DOSAGE FORMS

Pankti M. Shah, Jignesh S. Shah*, Dilip G. Maheshwari

Department of Quality Assurance and Pharm Regulatory Affairs, L. J Institute of Pharmacy, Ahmedabad, Gujarat, 382210, India

ABSTRACT

Angiotensin II-Receptor Antagonist effective approach towards hypertension and Conjunctive Heart Failure. Angiotensin II acts on two G-Protine-Coupled receptor, of which the Angiotensin 'AT_1' subtypes account for all the classic action of Angiotensin. As well as Vasoconstriction include stimulation of aldosterone production by adrenal cortex. The Antihypertensive effects on ACE inhibition and ARBs results primarily from vasodilatation with little change in cardiac output or rate, renal blood flow may increases. AT-II Antagonists includes drug like Azilsartan, Candesartan, Eprosartan, Irbesartan, Losartan, Olmesartan, Telmisartan, Valsartan and many other drugs. This Review enlist different method developed for determination of AT II-Receptor Antagonist like U.V. Spectrophotometric, HPLC, RP-HPLC, HPTLC, LC-UV, UPLC, LC-MS/MS, and Q-Absorbance Method.

Keywords: Hypertension, AT II-Receptor Antagonist, ARBs, ACE, Spectrophotometric

INTRODUCTION [1-5]:

Hypertension is High Blood Pressure [1]. Blood Pressure is the force of blood pushing against the walls of arteries as it flow through them, arteries are Blood Vessels that carry Oxygenated Blood from heart to the body tissues [1]. It is serious because people with this condition have a higher risk for heart diseases and other medicinal problem than people with normal BP, serious complication can be avoided by getting regular BP checks and treating Hypertension as soon as it is diagnosed [1]. If it is left untreated, Hypertension can lead to medical condition like Heart Attack, Arteriosclerosis, Enlarged Heart or Kidney Damage [1]. BP measurements are classified in Stages, according to severity [1]

Address for correspondence

Dr Jignesh S. Shah
Department of Quality Assurance and Pharm Regulatory Affairs, L. J Institute of Pharmacy, Ahmedabad, Gujarat, 382210, India
Email: jss192@gmail.com

A. Normal blood pressure: less than less tha n 120/80 mm Hg
B. Pre-hypertension: 120-129/80-89 mm Hg
C. Stage 1 hypertension: 140-159/90-99 mm Hg
D. Stage 2 hypertension: at or greater than 1 60-179/100-109 mm Hg

A typical Physical Examination to evaluate Hypertension includes; Medical and Family History, Chest X-Ray, Electrocardiogram (ECG), Blood and Urine Tests, Opthalmoscopy: Examination of Blood Vessels in Eye [1]. Antihypertensive classes of drugs are as follows [1]

1. Diuretics and Beta-blockers
2. Calcium channel blockers
3. Angiotensin converting enzyme inhibitor (ACE inhibitors)
4. Alpha-blockers
5. Alpha-beta blockers and Vasodilators
6. Peripheral acting adrenergic antagonists
7. Centrally acting agonists

Angiotensin converting enzyme inhibitors (AC E inhibitors)[2-5]:

Angiotensin II Receptor Antagonists Blockade of the Renin-Angiotensin system is now recognized as an effective approach to the treatment of Hypertension and Congestive Heart Failure[2]. Blocking the Renin- Angiotensin System (RAS) led to the discovery of Angiotensin-Converting-Enzyme (ACE) Inhibitors, developed as agents that would more completely block the RAS and thus decrease the adverse effects seen with ACE Inhibitors [3]. AT II Antagonists includes drug like Azilsartan, Candesartan, Eprosartan, Irbesartan, Losartan, Olmesartan, Telmisartan, and Valsartan. According to Clinical Trial. AT-II-Receptor Antagonists are as effective as Calcium-Channel Blockers, β-Blockers, and ACE Inhibitors in the treatment of Hypertension and induce fewer Adverse Effects[3]. Adverse Effects like dizziness, headache, upper-respiratory- tract infection, cough, and gastrointestinal disturbances occur at about the same rate as with placebo [3]. Renin is an Enzyme produce by Kidney in response to a number of factors, but principally Adrenergic (β_1 Receptor) activity and Sodium Depletion. Renin converts a circulating Glycoprotein (Angiotensinogen) into biologically inert ACE or Kinase II into the highly potent Vasoconstrictor Angiotensin II[4]. ACE located on luminal surface of capillary endothelial cells, particularly in lungs, and there are also Renin-Angiotensin Systems in many organs, e.g. Heart, Brain, the relevance of which is uncertain[4]. Angiotensin II acts on two G-Protein-Coupled Receptor, of which the Angiotensin 'AT_1' subtypes account for all the classic action of Angiotensin. As well as Vasoconstriction include stimulation of aldosterone production by adrenal cortex[4]. Angiotensin II have an important effect on blood pressure [4]. Bradykinin (endogenous vasodilator found in blood vessel walls) is also a substrate for ACE. Potentiation of Bradykinin contributing to the lowering of BP of ACE inhibitor in patient with Low-Renin causes of Hypertension[4].

USES [4]:

- The Antihypertensive effects on ACE Inhibition and ARBs results primarily from Vasodilatation with little change in Cardiac output or rate, Renal Blood Flow may increases.
- ACE Inhibitors and ARBs are most useful in Hypertension when the raised BP results from excess Renin production.

ARBs are remarkably free of side effects because they do not increase Kinin level; the ACE inhibitor related cough is not encountered. Angiordema, urticaria and taste disturbance are also rare[5]. Though effects of ACE Inhibitor and ARBs are not identical, latter it have all metabolic and prognostic advantage of ACE Inhibitor[5].

Table 1: Analysis of Component of drug by different Spectrophotometric Method [6-47]

S.no	Drug	Method	Description	Ref
1	Azilsartan Medoxomil in Bulk and Pharmaceutical dosage forms	**New Simple UV Spectrophotometric Method**	**Wavelength:** 249 nm **Solvent:** Acetonitrile **Linearity Range:** 1-20 µg/ml **Correlation Coefficient (R^2):** 0.999 **LOD:** 0.40 µg/ml **LOQ:** 1.31 µg/ml	6
2	Candesartan Cilexetil in Marketed tablet	**UV Spectrophotometric**	**Wavelength:** 253 nm **Solvent:** Methanol **Linearity Range:** 2-25 µg/ml **Correlation Coefficient (R^2):** 0.9993 **LOD:** 18.1 µg/ml **LOQ:** 54.90 µg/ml	7
3	Eprosartan Mesylate	**UV Spectrophotometer**	**Wavelength:** 233nm **Solvent:** 0.1N Methanol **Linearity Range:** 2-30 µg/ml **Correlation Coefficient (R^2):** 0.9998 **LOD:** 0.3623 µg/ml **LOQ:** 1.098 µg/ml	8
4	Irbesartan in Bulk and Dosage Forms	**New Simple UV Spectrophotometry**	**Wavelength:** 246.4 nm **Solvent:** 1 M sodium bicarbonate and 2 M urea (50:50% v/v) **Linearity Range:** 10-35 µg/ml	9

			Correlation Coefficient (R^2): 0.9998 **LOD:** 1.23 µg/ml **LOQ:** 3.72 µg/ml	
5	Losartan Potassium in Pharmaceutical dosage forms	**UV Spectrophotometry**	**Second Order Derivative** **Wavelength:** 234nm **Solvent:** Methanol **Linearity Range:** 8-22 µg/ml **Correlation Coefficient (R^2):** 0.9989 **LOD:** 9.7 µg/ml **LOQ:** 29.74 µg/ml	10
6	Olmesartan Medoxomil in Pharmaceutical Formulation	**Validated Spectrophotometric Method**	**Wavelength:** 256nm **Solvent:** Methanol **Linearity Range:** 4-14 µg/ml **Correlation Coefficient (R^2):** 0.9993 **LOD:** 0.105 µg/ml **LOQ:** 0.3045 µg/ml	11
7	Telmisartan	**Visible Spectrophotometry**	**Wavelength:** 427nm **Solvent:** Methanol **Linearity Range:** 10-60 µg/ml **Correlation Coefficient (R^2):** 10.9991 **LOD:** 8.362 µg/ml **LOQ:** 9.21 µg/ml	12
8	Valsartan in Pure and it's Formulations	**U.V Spectrophotometric Assay Method**	**Wavelength:** 250.80 nm **Solvent:** Methanol and Water **Linearity Range:** 5-30 µg/ml **Correlation Coefficient (R^2):** 0.996 **LOD:** 1.79 µg/ml **LOQ:** 5.97 µg/ml	13
9	Azilsartan Medoxomil in bulk and its dosage forms	**RP-HPLC Method**	**Detection Wavelength:** 248nm **Mobile Phase:** 0.05M Potassium Hydrogen Phosphate : Acetonitrile (60:40) **Stationary Phase:** Hypersil BDS C_{18}, 250*4.6 mm, 5µ **Retention Time:** 3.8 min **Flow Rate:** 1.0mL/min	14
10	Azilsartan Medoxomil Potassium in Human Plasma	**RP-HPLC Method**	**Detection Wavelength:** 254 nm **Mobile Phase:** 25 mM Ammonium Acetate buffer (pH 5.5) : Acetonitrile 55:45v/v **Stationary Phase:** Waters symmetry C (4.6 × 250mm, 5µm) column **Retention Time:** 7.5 min **Flow Rate:** 1.0 mL/min	15
11	Candesartan Cilexetil in Solid Dosage Forms	**RP-HPLC Method**	**Detection Wavelength:** 254nm **Mobile Phase:** 0.02M Mono Basic Potassium Phosphate Buffer: Acetonitrile: Triethyl Amine (40:60:0.2) and adjust pH to 6.0 with Ortho Phosphoric Acid. **Stationary Phase:** Inertsil ODS-3 C18 column (250 × 4.6 mm), 5µm **Retention Time:** 9.153 min **Flow Rate:** 2 mL/min **LOD:** 0.00005 µg/ml **LOQ:** 0.00017 µg/ml	16

12	Trityl Candesartan in Bulk Drug	**RP-HPLC Method**	**Detection Wavelength:** 255nm **Mobile Phase:** Buffer 0.1% Tri Fluoro Acetic acid in Water, and Acetonitrile **Stationary Phase:** Analytical column C-18 1.7µm, (2.1 X 100) mm **Retention Time:** 2.3 min **Flow Rate:** 0.45 mL/min	17
13	Eprosartan Mesylate	**HPLC Method**	**Detection Wavelength:** 233nm **Mobile Phase:** Acetonitrile : Methanol (35:9:6 v/v/v) **Stationary Phase:** Reverse Phase C18 (150x4.6mm, 5µm.) **Retention Time:** 6.02 min **Flow Rate:** 1.0 mL/min	18
14	Irbesartan in pharmaceutical dosage forms	**HPLC Method**	**Detection Wavelength:** 260nm **Mobile Phase:** Methanol : Acetonitrile : 2% OPA (40:40:20,v/v/v) **Stationary Phase:** Inertsil ODS C-18, 5µm column having 250 x 4.6mm **Retention Time:** 4.5 min **Flow Rate:** 1.5 mL/min	19
15	Losartan Potassium in Pharmaceutical Formulations	**Isocratic HPLC Assay(UV Method)**	**Detection Wavelength:** 225nm **Mobile Phase:** Triethylamine solution(0.5%) pH 2.4 : Acetonitrile (60:40 v/v) **Stationary Phase:** CLC-C8 column 150*4.6 mm. 5µm **Flow Rate:** 1.0 mL/min **Linearity Range:** 15-45 µg/ml **Correlation Coefficient (R^2):** 0.999	20
16	Losartan Potassium in bulk and Formulations	**Rapid ultra-performance liquid chromatography Method**	**Detection Wavelength:** 245nm **Mobile Phase:** Phosphate buffer (pH 3.2) : Acetonitrile (50:50 v/v) **Stationary Phase:** Waters Acquity BEH C18 (100 mm× 2.1 mm), 1.7-µm column **Retention Time:** 5.0 min **Flow Rate:** 0.2 mL/min	21
17	Olmesartan Medoxomil tablets	**RP-HPLC Method**	**Detection Wavelength:** 255nm **Mobile Phase:** Acetonitrile: 5 mM Ammonium Acetate (adjusted to pH 4.5 using Ortho Phosphoric Acid) (60:40 v/v) **Stationary Phase:** C18 (250 mm x 4.6 mm i.d., 5 µ) **Retention Time:** 4.9 min **Flow Rate:** 1.0 mL/min	22
18	Olmesartan Medoxomil from tablet dosage form	**HPTLC Method**	**Detection Wavelength:** 301nm **Mobile Phase:** Chloroform: Acetonitrile: Toluene: Glacial Acetic Acid (1:8:1:0.1 v/v) **Stationary Phase:** Silica gel60 F254 TLC plates 10x10cm with layer thickness 0.2cm **Linearity Range:** 50-500 ng/spot	23

			Correlation Coefficient (R^2): 0.999 **LOD:** 4.79 ng/spot **LOQ:** 15.97 ng/spot	
19	Telmisartan in serum samples	**RP-HPLC Method**	**Detection wavelength:** 282nm **Mobile phase:** Buffer : Acetonitrile (35:65 v/v) **Stationary phase:** C18 column (250x4.6mm, 5µm) **Retention time:** 3.32 min **Flow rate**: 1.0ml/min	24
20	Valsartan in Pharmaceutical Dosage Forms	**RP-HPLC Method**	**Detection Wavelength:** 269 nm **Mobile Phase:** Methanol : Water : THF 60:35:05 (v/v/v) **Stationary Phase:** C_{18} Column **Linearity Range:** 10-35 ppm **Retention Time:** 4.6 min **Flow Rate:** 1 mL/min	25
21	Hydrochlorthiazide and Candesrtan Cilexetil in pharmaceutical formulations	**LC-UV Method**	**Detection Wavelength:** 271nm **Mobile Phase:** 0.02 M Potassium Dihydrogen Phosphate : Methanol : Triethyl-Amine (25:75:0.2) **Stationary Phase:** Phenyl-2 column **Linearity Range:** Hydrochlorthiazide: 5-45 µg/ml Candesartan Cilexetil: 12-56 µg/ml **Correlation Coefficient (R^2):** 0.999 **Retention Time:** Hydrochlorthiazide: 2.8 min Candesartan Cilexetil: 4.9 min	26
22	Eprosartan, Hydrochlorthiazide in pharmaceutical dosage forms	**UPLC Method**	**Detection Wavelength:** 274nm **Mobile Phase:** Acetonitrile : Disodium Hydrogen Phosphate Buffer (0.01 M ; pH 5.5 adjusted with Phosphoric Acid) **Stationary Phase:** Acquity® HSS C18 column (1.7 µm, 2.1 mm × 150 mm) **Linearity Range:** 0.017-3.79 µg/mL. **Flow Rate:** 0.3 mL/min	27
23	**Olmesartan Medoxomil and Amlodipine Besylate in tablet Dosage Form**	**UV Spectrophotometry**	**Wavelength:** Olmesartan Medoxomil: 265 nm Amlodipine Besylate: 360 nm **Solvent:** ACN: Water **Linearity Range:** Olmesartan Medoxomil: 2-32 µg/mL. Amlodipine Besylate: 2-20 µg/mL. **Correlation Coefficient (R^2):** 0.999	28
24	Losartan and Irbesartan in Pure and Pharmaceutical Preparation	**Spectrophotometric Method**	**Wavelength:** Losartan: 485 nm Irbesartan: 481 nm **Solvent:** Distilled Water **Linearity Range:** Losartan: 25-150 µg/mL. Irbesartan: 20-100 µg/mL.	29

			Correlation Coefficient (R^2): Losartan: 0.9934 Irbesartan: 0.9994	
25	Rosuvastatin calcium and Telmisartan in bulk and combined dosage form	**UV Spectrophotometric Method**	**Detection wavelength:** Telmisartan:309 nm Rosuvastatin:248 nm **Solvent:** 0.1N NaOH, Methanol, 0.1N HCl **Linearity range:** 20-60µg/ml	30
26	Valsartan and Cilnidipine in Synthetic Mixture	**Spectrophotometric Method**	**Second Order Derivative** **Detection Wavelength:** Valsartan: 227 nm Cilnidipine: 219 nm **Solvent:** Methanol **Linearity Range:** Valsartan: 5-25 µg/ml Cilnidipine: 2-10 µg/ml **Correlation Coefficient (R^2):** Valsartan: 0.9980 Cilnidipine: 0.9994	31
27	Eprosartan and Hydrochlorthiazide in Tablets	**HPLC Method**	**Detection Wavelength:** 272nm **Mobile Phase:** 0.5% Formic Acid-Methanol-Acetonitrile [(80 : 25 : 20 v/v/v) **Stationary Phase:** Phenomenex C18 column (250 x 4.6 mm i.d., 5 µm) **Linearity Range:** 2.5-25 µg/ml **Correlation Coefficient (R^2):** 0.999 **Retention Time:** Eprosartan: 7.69 ± 0.10min Hydrochlorthiazide: 4.24 ± 0.09 min **Flow Rate:** 1.0 mL/min	32
28	Azilsartan and Chlorthalidone in pharmaceutical Dosage forms	**RP-HPLC Method**	**Detection Wavelength:** 230nm **Mobile Phase:** 0.1% Ortho Phosphoric Acid buffer : Acetonitrile (30:70) **Stationary Phase:** ODS (250mm: 4.6mm, 5µ) **Linearity Range:** Azilsartan: 100ppm-600ppm Chlorthalidone: 31.25ppm-187.5ppm **Correlation Coefficient (R^2):** 0.999 **Flow Rate:** 1.0 mL/min	33
29	Candesartan and Amlodipine in bulk and pharmaceutical dosage forms	**RP-HPLC Method**	**Detection Wavelength:** 238nm **Mobile Phase:** Potassium Hydroxide : Acetonitrile (35:65 V/V) **Stationary Phase:** C_{18} analytical column (150 mm x 4.6 mm I.D., 5 µm) **Linearity Range:** Candesartan: 4-24 µg/mL Amlodipine: 2.5-15 µg/mL **Correlation Coefficient (R^2):** Candesartan: 0.999 Amlodipine: 1	34

			Retention Time: 3.610 min **Flow Rate:** 1.0 mL/min	
30	Irbesartan and Hydrochlorthiazide in Tablets	**Simultaneous Equation Method and Q-Absorbance Method**	**Simultaneous Equation Method** **Detection Wavelength:** Irbesartan: 250nm Hydrochlorthiazide: 270.6 **Mobile Phase:** Methanol **Linearity Range:** Irbesartan: 2-36 µg/mL Hydrochlorthiazide: 1-18 µg/mL **Correlation Coefficient (R^2):** 0.999 **Q-Absorbance Method** **Linearity Range:** 1-24 µg/mL	35
31	Perindopril and Losartan in Pure Form and Tablet Formulations	**RP-HPLC Method**	**Detection Wavelength:** 210nm **Mobile Phase:** Methanol and phosphate buffer (pH 6.8) in the ratio of 85:15 **Stationary Phase:** LUNA C18 column at 210 nm by isocratic elution **Linearity Range:** Perindopril: 200-500 µg/mL Losartan: 30-80 µg/mL **Correlation Coefficient (R^2):** 0.999 **Retention Time:** Perindopril: 4.62 min Losartan: 4.09 min **Flow Rate:** 0.8 mL/min	36
32	Amlodipine and Losartan in Binary Mixture	**RP-HPLC Method**	**Detection Wavelength:** 237nm **Mobile Phase:** Mobile Phase-A 70% v/v of Buffer pH-3.7 and 30%v/v of Acetonitrile Mobile Phase–B 70% v/v Acetonitrile: 30% v/v Buffer pH-3.7. **Stationary Phase:** Inertsil ODS 3V C18 (150 X 4.6 mm, 5µm) **Linearity Range:** Amlodipine: 1.25-7.5 µg/mL Losartan: 12.5-75 µg/mL **Correlation Coefficient (R^2):** 0.999 **Retention Time:** Amlodipine: 5.13 min Losartan: 11.11 min **Flow Rate:** 1.0 mL/min	37
33	Atenolol and Losartan Potassium in Combine Dosage Form	**UV Spectrophotometric Method by Q-Analysis**	**Detection Wavelength:** Atenolol: 275nm Losartan Potassium: 282nm **Linearity Range:** 5-30 **Correlation Coefficient (R^2):** 0.999	38
34	Olmesartan and Indapamide in Bulk Drug and Combine Tablet Formulation	**HPTLC Method**	**Detection Wavelength:** 254nm **Mobile Phase:** Toluene: Chloroform: Ethanol (4:4:1 v/v). **Stationary Phase:** Aluminum plates coated with Silica gel 60 F254 adsorbent **Linearity Range:**	39

			Olmesartan: 100 to 700 ng/spot Indapamide: 100 to 600 ng/spot **Correlation Coefficient (R^2):** Olmesartan: 0.99930 µg/mL Indapamide: 0.99660	
35	Olmesartan Medoxomil and Hydrochlorthiazide	**UV, HPLC Method**	**Detection Wavelength:** 225nm **Mobile Phase:** Mobile Phase A Acetonitrile : Methanol (1:1) Mobile phase B 15 mM Phosphate Buffer (pH adjusted to 3.0 with Ortho Phosphoric Acid) (50:50) **Stationary Phase:** Phenomenex Luna HPLC analytical column C18 100 A^0 column (250 x 4.6 mm, 5 µm) **Linearity Range:** For UV Olmesartan Medoxomil: 2-20 µg/mL Hydrochlorthiazide: 2-10 µg/mL For HPLC Olmesartan Medoxomil: 25-75 µg/mL Hydrochlorthiazide: 4-25 µg/mL **Correlation Coefficient (R^2):** 0.99	40
36	Telmisartan and Amlodipine in Human Plasma	**LC–MS/MS Method**	**Mobile phase:** Acetonitrile: 5 mm Ammonium acetate buffer (50:50, v/v) **Stationary phase:** C18 column (50x4.6mm, 5µm in particle size) **Retention time:** Telmisartan: 1.52 min Hydrochlorthiazide: 0.65min **Flow rate:** 0.8ml/min	41
37	Telmisartan and Chlorthalidone in Bulk and Pharmaceutical Dosage Form	**HPTLC Method**	**Detection wavelength:** 242nm **Mobile phase:** Acetonitrile : Toluene : Glacial Acetic Acid (7.5: 2.5: 0.05 v/v/v) **Stationary phase:** Precoated silica gel 60f254 plates **Rf factor:** Telmisartan : 0.26 ± 0.02 Hydrochlorthiazide: 0.67 ± 0.02	42
38	Telmisartan and Indapamide in Pure Marketed Formulation	**RP-HPLC Method**	**Detection wavelength:** 285nm **Mobile phase:** Buffer: Acetonitrile : Methanol (40:25:30) **Stationary phase:** Amazone C18, 5 Microm, 150 x 4.6 mm **Linearity:** Telmisartan:6-22.5microg/ml Indapamide:11.2-42microg/ml **Flow rate:** 1.0 ml/min	43
39	Valsartan and Ramipril in Combine Dosage Forms	**RP-HPLC Method**	**Detection Wavelength:** 225 nm **Mobile Phase:** Phosphate Buffer (1%): Acetonitrile	44

			(40:60 v/v, pH 3.2) **Stationary Phase:** C18 (5 µm, 250mm x 4.6 mm) **Linearity Range:** Valsartan: 3-15 µg/ml Ramipril: 6-30 µg/ml **Retention Time:** Valsartan: 6.6 min Ramipril: 3.5 min **Correlation Coefficient (R^2):** Valsartan: 0.9906 Ramipril: 0.9932	
40	Valsartan and Ezetimide in Pharmaceuticals	**Stability-Indicating HPLC Method**	**Detection Wavelength:** 230 nm **Mobile Phase:** Phosphate Buffer and Acetonitrile (58:42v/v, pH 3.15) **Stationary Phase:** C18 Column **Linearity Range:** 1-200 µg/ml **Flow Rate:** 0.8 mL/min **Correlation Coefficient (R^2):** 0.999	45
41	Olmesartan Medoxomil, Amlodipine Besylate and Hydrochlorthiazide in Pharmaceutical Dosage Forms	**Simultaneous Equation Method and Absorption Correction Method**	Method A **Detection Wavelength:** Olmesartan Medoxomil: 266.2nm Amlodipine Besylate: 238.5nm Hydrochlorthiazide: 271.2nm **Linearity Range:** 4-24 µg/ml **Correlation Coefficient (R^2):** 0.999 Method B **Detection Wavelength:** Olmesartan Medoxomil: 266.2 nm Amlodipine Besylate: 359nm Hydrochlorthiazide: 316.4nm	46
42	Valsartan, Amlodipine and Hydrochlorthiazide in Dosage Form and Spiked Human Plasma	**HPLC Method**	**Detection Wavelength:** 227 nm **Mobile Phase:** Acetonitrile-Phosphate Buffer (0.05 M) with pH 2.8 (40/60, v/v) **Stationary Phase:** RP-C18 chromatographic column, Phenomenex Kinetex (150 mm × 4.6 mm i.d) **Linearity Range:** Valsartan: 5 - 40 µg/ml Amlodipine: 4-28 µg /m Hydrochlorthiazide: 1 - 12 µg/ml **Retention Time:** Valsartan: 11.19 min Amlodipine: 3.16 min Hydrochlorthiazide: 2.26 min **Flow Rate:** 0.8 mL/min	47

CONCLUSION:

This Review represents the Reported Spectrophotometric and Chromatographic Methods Developed and Validated for determination of Angiotensin II-Receptor Antagonist in different Dosage Forms. Here ARBs shows the simple, accurate, precise method development of the different drug formulations. The Method Development take place for determination of AT II-Receptor Antagonist like UV Spectrophotometric, HPLC, RP-HPLC, HPTLC, LC-UV, UPLC, LC-MS/MS, and Q-Absorbance.

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