International Journal of Research in Pharmacy and Pharmaceutical Sciences
ISSN: 2455-698X
Impact Factor: RJIF 5.22
www.pharmacyjournal.in
Volume 3; Issue 1; January 2018; Page No. 144-153

A review on chromatographic and spectrophotometric method for estimation of Sumatriptan and Promethazine in bulk and in different dosage forms

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Abstract
Sumatriptan is use for the migraine with and without aura and for cluster headaches. It is a 5-Hydroxy tryptamine (5-HT) receptor agonist type (5-HT_{1B} and 5-HT_{1D}). Promethazine is an antiemetic drug belonging to the class of Phenothiazine. Sumatriptan plus Promethazine was proved to be effective at a dose of 50mg and 25mg in management of migraine compare to the Sumatriptan monotherapy. Addition of Promethazine to Sumatriptan was proved effective in relief of nausea and vomiting, rate of pain recurrence reduced with significant improvement in the headache free rate. A triptan plus antiemetic showed the effective results in relief of the migraine associated Headache, Nausea, Vomiting, Photophobia and Phonophobia.

Keywords: sumatriptan succinate, promethazine hydrochloride, UV- spectroscopy, HPLC (high performance liquid chromatography), HPTLC (high performance thin layer chromatography), LC (liquid chromatography)

Introduction

Sumatriptan is a drug use for the migraine with and without aura and for cluster headaches. It is a 5-Hydroxy tryptamine (5-HT) receptor agonist type (5-HT_{1B} and 5-HT_{1D}). At the 5-HT1B/1D receptors on sensory nerves and intracranial blood vessels of the trigeminal system, it exerts agonist effect which result in inhibition of pro-inflammatory neuropeptide release and cranial vessel constriction. It works by 3 mechanisms of action, vasoconstriction of the dilated vessels, Inhibiting the nociceptive transmission in the trigeminal nerves system preventing the central sensitization development.

Promethazine is an antiemetic drug use in nausea, vomiting, in treatment of migraines, as a sedative for better sleep, pain reliever. It works as a strong H_1 receptor antagonist and a moderate mAch receptor antagonist (anticholinergic). It competes with free histamine for binding at the H_1 receptor sites present in large blood vessels, GIT, uterus. The relief of nausea appears to be related to central anticholinergic actions.

Combination of a triptan and an anti-emetic found to be effective in the migraine by reducing the reoccurrence of headache, reducing rate of pain recurrence. Combination of the Sumatriptan and Promethazine showed effective result in relief of nausea and vomiting along with greater significant relief in photophobia and phonophobia.

Reported methods are categorized depending on the following considerations

1. Single component analyzed by UV-spectroscopy methods and chromatographic method.
2. Analysis of Sumatriptan and Promethazine in combination with other drugs by UV-spectroscopy methods and chromatographic method.

Table 1: Reported Analytical Method of Sumatriptan [3-24]

S. No.	Drug	Method	Description
1	Sumatriptan Succinate in Formulation.	Stability indicating Miceller electro kinetic chromatography Capillary electrophoresis.	Wavelength: 226nm Linearity range: 100-2000µg/ml Electrolyte: 25mM sodium dihydrogen phosphate pH 2 Solvent: water Stationary phase: fused silica capillary 50µm×40cm.
2	Sumatriptan Succinate In Pharmaceutical Dosage Forms.	RP-HPLC-UV	Wavelength: 227nm Linearity range: 25-600 ng/ml Co-relation Coefficient: 0.9998 Mobile phase: 25mM sodium dihydrogen phosphate pH 4 and acetonitrile (65:35, v/v) Stationary phase: thermoshypersil C_4 column (250mm × 4.5mm, 5µm) Retention time: 4.51 min Flow rate: 1 ml/min
3	Sumatriptan Succinate and Naproxen Sodium in Bulk and	RP-HPLC	Wavelength: 229 Linearity range: 1-5µg/ml Co-relation Coefficient: Sumatriptan: 0.994 Naproxen: 0.999

	Pharmaceutical Dosage Form.		Mobile phase: Acetonitrile: Methanol: phosphate buffer (50:10:40) pH 6 Stationary phase: C18 column (250x 4.6 mm, 5µm) Retention time: Sumatriptan: 2.81 min Naproxen: 4.037 min.
4	Sumatriptan and Zolmitriptan in Presence of Their Degradation Products	HPTLC	Wavelength: -Sumatriptan: 228 -Zolmitriptan: 222 Linearity range: -Sumatriptan: 0.5–4 µg/spot -Zolmitriptan:0.5–3 µg/spot Mobile phase: -Sumatriptan: chloroform–ethyl acetate–methanol–ammonia (4:3: 3:0.1, v/v) -Zolmitriptan: chloroform–ethyl acetate–methanol– ammonia (3:3:3:1, v/v) Stationary phase: TLC silica gel 60 F254 plates Rf value: -Sumatriptan: 0.16 -Zolmitriptan: 0.85
5	Sumatriptan Succinate and Naproxen Sodium in Pharmaceutical Dosage Form.	Stability indicating RP-HPLC	Wavelength: 280nm Linearity range: -Sumatriptan: 0.4-6.4 mg/ml -Naproxen: 0.076-1.2 mg/ml Co-relation Coefficient: -Sumatriptan: 0.999 -Naproxen: 0.999 Mobile phase: A- 0.05mm 1-hexane sulphonate sodium salt 3 ml of tri ethyl amine for 1000 ml of HPLC water, pH 6.7), acetonitrile: methanol (65:30:5 v/v/v) B- Water-Acetonitrile (10:90 v/v) Stationary phase: Phenomenex Luna C8 column (250 mm x 4.6 mm, 5µm) Retention time: -Sumatriptan: 3.55min -Naproxen: 4.44min
6	Sumatriptan Succinate and Naproxen Sodium in Combine Tablet.	Stability indicating UPLC	Wavelength: 225nm Linearity range: -Sumatriptan: 850-2565 µg/ml -Naproxen: 5000-15000 µg/ml Co-relation Coefficient: 0.999 Mobile phase: 0.2% Ortho Phosphoric Acid: Acetonitrile (90:10; v/v) Stationary phase: C18,50×4.8mm,1.8-µm) Retention time: -Sumatriptan: 1.7min -Naproxen: 2.7min Flow rate: 1ml/min
7	Sumatriptan Succinate Tablets Using Folin Reagent	visible spectrophotometric	Wavelength: 455 nm Linearity range: 16-48 µg/ml Correlation coefficient: 0.9989 %RSD: 0.55
8	Sumatriptan Succinate from Pharmaceutical Formulation.	visible spectrophotometric	Wavelength:552 nm Linearity range: 5-20µg/ml. Co-relation Coefficient:0.9996 %RSD: 0.88
9	Sumatriptan In Tablet Dosage Form.	HPTLC	Wavelength: 230 nm Linearity range: 200-800ng/spot Co-relation Coefficient: 0.9978 Mobile phase: Methanol: Water: Glacial Acetic Acid (4.0:8.0:0.1, v/v/v) Stationary phase: Precoated silica gel 60F254 LOD: 63.87ng/spot LOQ: 193.54ng/spot
10	Sumatriptan and Naproxen Tablets.	Stability indicating HPLC	Wavelength: 225 nm Co-relation Coefficient: 0.999 Stationary phase: WatersSpherisob ODS (250 x 4.6 mm, 5µm) Mobile phase: A- 0.05M potassium dihydrogen phosphate bufferpH 3 B-Water: Methanol: Acetonitrile (200:150:650 v/v) Flow rate: 1ml/min
11	Sumatriptan	RP-HPLC	Wavelength: 277 nm

	Succinate and Naproxen Sodium in Pharmaceutical Dosage Form.		Co-relation Coefficient: 0.999 of both drugs. Linearity range: 5-80 µg/ml Stationary phase: Purospher (250x 4.6 mm, 5µm) Mobile phase: ACN: Water (60:40) Retention time: -Sumatriptan: 2.26 min -Naproxen: 5.79 min Flow rate: 1ml/min
12	Sumatriptan Succinate in Bulk and Dosage Form.	RP-HPLC	Wavelength: 228 nm Co-relation Coefficient: 1 Linearity range: 5-30µg/ml Stationary phase: Hypersil BDS C18 (150×4.6 mm, 5µm) Mobile phase: phosphate buffer pH 6.8: ACN (70:30) Flow rate: 1ml/min
13	Sumatriptan Succinate in Pharmaceutical Dosage Form.	RP-HPLC	Wavelength: 232 nm Co-relation Coefficient: 0.997 Linearity range: 10-50µg/ml Stationary phase: Purospher® 5µm, 250mm X 4.6mm Mobile phase: ACN: Water (18:82) 0.05% v/v trifluoro acetic acid Retention time: 5.2 min Flow rate: 1ml/min
14	Sumatriptan succinate and naproxen sodium in bulk and pharmaceutical dosage form.	RP-HPLC	Wavelength: 284nm Linearity range: -Sumatriptan: 30-70 µg/ml -Naproxen: 20-60 µg/ml Co-relation Coefficient: -Sumatriptan: 0.999 -Naproxen: 0.999 Mobile phase: Buffer and Acetonitrile (25:75 v/v) Stationary phase: XTerra C18 (150mm x 4.6mm i.d., 3.5µm Retention time: -Sumatriptan: 2.622 min -Naproxen: 4.07 min Flow rate: 0.8 ml/min
15	Sumatriptan Succinate in Bulk and Pharmaceutical Dosage Form.	UV spectrophotometric	Wavelength: 282 nm Linearity range: 10-70 µg/ml Correlation coefficient: 0.999 Solvent: Methanol LOD: 0.33 µg/ml LOQ: 1.01 µg/ml %RSD: 0.40
16	Sumatriptan Succinate, Metoclopramide Hydrochloride and Paracetamol	RP-HPLC	Wavelength: 230 nm for 6.8 min, 248 nm from 6.81 to 8.5 min and 213 nm for rest of the time. Linearity range: 0.5-32 µg/mL Co-relation Coefficient: -Sumatriptan: 1 -Metoclopramide: 0.999 -Paracetamol: 0.999 Mobile phase: KH_2PO_4 buffer: MeOH (60:40 v/v), pH 5 Stationary phase: XTerra C18 (150mm x 4.6mm i.d., 3.5µm Retention time: -Sumatriptan: 6.1 min -Metoclopramide: 7.4 min -Paracetamol: 10.8 min
17	Sumatriptan Succinate, Naproxen and Domperidone	RP-HPLC	Wavelength: 280 and 262 nm. Linearity range: 0.9 to30 µg/ml Co-relation Coefficient: -Sumatriptan: 0.999 -Naproxen: 1 -Domperidone: 1 Mobile phase: Phosphate Buffer: Acetonitrile: Methanol (40: 10: 50) pH adjusted to 3.5 with dilute orthophosphoric acid

			Stationary phase: LichroCART, C-18 column (250mm×4.6mm, 5µm) Retention time: -Sumatriptan: 2.21 min -Naproxen: 7.91 min -Domperidone: 3.71 min
18	Sumatriptan Succinate in Bulk Drug and Tablet Dosage Form	HPLC	Wavelength: 230 nm Co-relation Coefficient: 0.999 Linearityrange:50–1050 ng/ml Stationary phase: Ascentis® Si HPLC Column (25cm×2.1mm, 5µm) Mobile phase: Ammonium phosphate − acetonitrile (80:20, v/v, pH 3.5 adjusted with ortho-phosphoric acid Retention time: 6.8 min Flow rate: 1ml/min
19	Sumatriptan Succinate Based on Charge Transfer Complex Formation	Visible spectrophotometric	Wavelength: A- 548 nm, B- 660 nm Linearity range: A- 5-25µg/ml B- 20 - 60 µg/ml Correlation coefficient: 0.9989 Solvent: chloroform %RSD: A- 0.5675, B- 0.839
20	Sumatriptan Succinate in Pure Drug and Pharmaceutical Formulation	Visible Spectrophotometric	Wavelength: 545nm Linearity range: 0.8-16.0 µg/ml Correlation coefficient: 0.999 Solvent: water LOD:0.41 µg/ml LOQ:1.23 µg/ml
21	Sumatriptan And Kinetic Study of The Degradation	Stability indicating liquid chromatography	Wavelength: 225 nm Co-relation Coefficient: 0.999 Linearity range:50-800 ng/ml Stationary phase: Grace C18 (2.1 x 250 mm, 5 µm Mobile phase: water (contains 0.1% triethylamine, pH 6.5 by phosphoric acid): acetonitrile (6: 4, v/v) Retention time: 4.1 min Flow rate: 0.2 ml/min LOD: 16.6 ng/ml LOQ: 50 ng/ml
22	Sumatriptan, Naproxen and Domperidone.	RP-HPLC	Wavelength: 280 nm. Linearity range: -Sumatriptan: 3.125-37.5 µg/ml -Naproxen: 31.25-375 µg/ml -Domperidone: and 1.25-15 µg/ml Co-relation Coefficient: -Sumatriptan: 0.999 -Naproxen: 0.999 -Domperidone: 0.999 Mobile phase: Acetonitrile: Methanol: 20mM Phosphate Buffer pH 4 (10:50:40) Stationary phase: Grace C18 5µm (4.6 x 150 mm) Retention time: Sumatriptan: 1.64 min -Naproxen 7.53 min -Domperidone: 3.83 min Flow rate: 1ml/min
23	Sumatriptan impurity	HPLC LC/MS-MS	HPLC Wavelength: 282nm Stationary phase: C18 (2.1 x 250 mm, 5 µm) Mobile phase: A: Buffer pH 7.5 (by ammonium solution): Acetonitrile (90:10, v/v) B: Buffer pH 7.5 (by ammonium solution): Acetonitrile (10:90, v/v) Retention time: 20.49 min Flow rate: 0.9 ml/min LC/MS-MS Wavelength: 282nm Stationary phase: C18 (2.1 x 250 mm, 5 µm) Mobile phase: A: Buffer (1ml trifluoracetic acid in 1000ml water adjusted pH 7.5 by ammonium solution):

			Acetonitrile. B: acetonitrile in gradient Flow rate: 0.75ml/min m/z: 587.25
24	Sumatriptan and Naproxen in bulk and tablet dosage form	RP-HPLC	Wavelength: 277nm Linearity range: 20-80 µg/ml Co-relation Coefficient: 1 Mobile phase: Water: methanol (45:55 v/v) Stationary phase: ODS C18 (250mm x 4.6mm i.d., 5µm) Retention time: Sumatriptan: 2.79 min -Naproxen: 3.4 min Flow rate: 1 ml/min
25	Sumatriptan in bulk and pharmaceutical dosage form	RP-HPLC	Wavelength: 221 nm Co-relation Coefficient: 0.999 Linearity range: 5-150 µg/ml Stationary phase: C18 ODS Inertsil (250×4.6mm, 5µm) Mobile phase: buffer: acetonitrile: methanol (80:10:10 v/v/v), pH was adjusted to 2.5 with orthophosphoric acid (OPA) Retention time: 4.4 min LOD: 1.967 µg/ml LOQ: 5.961 µg/ml
26	Sumatriptan and naproxen in spiked human plasma	RP-HPLC	Wavelength: 229nm Linearity range: 1-3 µg/ml Co-relation Coefficient: Sumatriptan: 0.995, Naproxen: 0.987 Mobile phase: Acetonitrile: Methanol: phosphate buffer pH 6 (50:10:40 v/v) Stationary phase: ODS C18 (250mm x 4.6mm i.d., 5µm) Flow rate: 1 ml/min
27	Sumatriptan and naproxen in bulk and pharmaceutical dosage form	RP-HPLC	Wavelength: 285nm Linearity range: 60-100 µg/ml Co-relation Coefficient: 0.999 Mobile phase:Buffer: acetonitrile (50:50) Stationary phase: C8(4.6x150mm.3.5µm) Retention time: Sumatriptan: 5.87min -Naproxen: 2.24min LOD: 3.36µg/ml LOQ: 3.206µg/mL Flow rate: 0.7 ml/min
28	Sumatriptan in rat plasma and brian	UV-HPLC	Wavelength: 228 nm Co-relation Coefficient: Plasma:0.9998 Brain: 0.9994 Linearity range: Plasma: 3–2000 ng/ml and Brain: 3-1000 ng/ml Stationary phase: C18 Mobile phase: 22% acetonitrile and 78% ammonium phosphate buffer (0.04 M, adjusted pH 3.7)
29	Sumatriptan in pure and dosage form	Spectrophotometry	Wavelength: A: 508 nm B: 610 nm Reagent: Bromate-Bromide Dyes: A: Methyl Orange B: Indigo Carmine Linearity range: A:0.2-1.6 µg/ml B: 2.0-12.0 µg/ml Correlation coefficient: A:0.999 B:0.998
30	Sumatriptan and naproxen in pharmaceutical dosage form	HPTLC	Wavelength: 277nm Linearity range: -Sumatriptan:250-1500 ng/spot -Naproxen: 1000-6000 ng/spot Co-relation Coefficient: -Sumatriptan: 0.997 -Naproxen: 0.996 Rf: Sumatriptan: 0.49, Naproxen: 0.28 LOD: Sumatriptan:39.85ng/spot Naproxen: 80.35 ng/spot LOQ: Sumatriptan: 120.77 ng/spot -Naproxen: 243.5 ng/spot

31	Sumatriptan and naproxen in pharmaceutical dosage form	UV spectrophotometry (first order derivative)	Wavelength: 226.50 nm and 230 Linearity range: Suma: 0.5-2.5µg/ml, Naproxen: 2-10 µg/ml Correlation coefficient: Suma: 0.998, Naproxen: 0.997 Solvent: Water LOD: 0.09 µg/ml, 0.97 µg/ml LOQ: 0.28 µg/ml, 1.98 µg/ml
32	Sumatriptan and naproxen in pharmaceutical dosage form	UV spectrophotometry A: Q absorption ratio B: first order derivative	Wavelength: A: 272 nm NAP and 284 nm B: Nap 298 nm, Suma335 nm Linearity range: A: 10-90 µg/ml B: 20-190 µg/ml Solvent: Methanol Correlation coefficient: Sumatriptan: 0.9991 at 272 nm 0.9994 at 284 nm Naproxen:0.9967 272nm 0.9994 at 284 nm
33	Sumatriptan in human plasma	HPLC/MS-MS	Wavelength: 296nm Co-relation Coefficient: 0.999 Linearity:0.3–100 ng/mL Stationary phase: C18 column (150 × 2.1 mm, 5 µm) Mobile phase: 40% acetonitrile in water with 0.1% formic acid Flow rate: 0.2ml/min m/z 296: 58
34	Sumatriptan in bulk and dosage form	A: Titrimetric B: Spectrophotometry C: Spectrophotometry	Brominating Agent: N-Bromosuccinimide Method A: Titrated with thiosulphate. Method B: Wavelength: 370nm Linearity: 0.0–15.0 µg/ml Co-relation Coefficient: 0.999 Method C: Wavelength: 570nm Linearity: 0.0–4.0 µg/ml Co-relation Coefficient: 0.999
35	Sumatriptan, Rizatriptan, Zolmitriptan in bulk	RP-HPLC	Wavelength: 280nm Co-relation Coefficient: 0.999 Linearity range: 1-10 µg/ml Solvent: Methanol Stationary phase: ODS C18 Mobile phase: Acetonitrile: Sodium Phosphate buffer Retention time: Rizatriptan:7.215 Sumatriptan:8.432 Zolmitriptan:9.185

Table 2: Reported Method of Promethazine [24-41]

S. No	Drug	Method	Description
1	Paracetamol and Promethazine in Tablet Dosage Forms	U.V spectrophotometric Absorbtion ratio method	Wavelength: PMZ: 254 and 248 PCM: 244 and 248 Linearity range: PMZ: 5-25 µg/ml PCM: 5-25 µg/ml Correlation coefficient: PMZ: 254:0.9967, 248: 0.9982 PCM: 244:0.9982, 248: 0.999 Solvent: distill water. LOD: PMZ:0.1251 µg/ml, 0.0233 µg/ml PCM: 0.0346 µg/ml, 0.0117 µg/ml LOQ: PMZ:0.417 µg/ml, 0.0776 µg/ml PCM:0.1153 µg/ml, 0.039 µg/ml
2	Promethazine HCl In Phosphate Buffer Saline pH 7.4	U.V spectrophotometric	Wavelength:251 nm Linearity range: 2-10 µg/ml Correlation coefficient: 0.9986 Solvent: phosphate buffer saline pH 7.4
3	Promethazine Hydrochloride by	UV spectrophotometric	Wavelength: 304 nm Linearity range: 2-20ug/m1

	in (111)		Correlation coefficient: 0.997 Solvent: water.
4	Promethazine Hydrochloride in Dosage Form.	HPLC	Wavelength: 249 nm Stationary phase:150 mm x 4.6 mm 3µ, C8 Mobile phase: acetonitrile-25mM phosphate buffer (pH 7.0) 50:50 (v/v) Flow rate: 1ml/min
5	Promethazine Enantiomers in Pharmaceutical Formulations	HPLC	Wavelength: 254 nm Co-relation Coefficient: 0.999 Linearity range:0.8–6 µg/ml Stationary phase: Vancomycin Chirobiotic V column 250 ´ 4.6 mm Mobile phase: methanol: acetic acid: triethylamine (100:0.1:0.1% V) Retention time: 4.1 min Flow rate: 1 ml/min LOD: 0.04 mg/mL LOQ: 0.07 mg/Ml
6	Promethazine Hydrochloride Determination Using Bromcresol Green	U.V visible spectrophotometric	Wavelength: 415 nm Complexing agent: bromcresol green Linearity range: 1.2-8.5 µg/ml Solvent: chloroform
7	Promethazine Hydrochloride	A-Flame Atomic Emission B- Molecular Absorption Spectrophotometry	A Method: Wavelength:766 nm Linearity range:1-18 µg/mL Co-relation Coefficient: 0.9914 B Method: Wavelength:440 nm Linearity range:1-18 µg/ml Co-relation Coefficient: 0.9984
8	Promethazine Hydrochloride in Pharmaceutical Formulation	Visible spectrophotometric	Wavelength:516 nm Linearity range:2-15 µg/ml Co-relation Coefficient: 0.9993 %RSD: 0.86
9	Thiazinamium, Promazine And Promethazine in Pharmaceutical Dosage Form	Capillary zone electrophoresis	Wavelength: 254 nm Voltage: 30kV Separation: silica fused capillary 58.5×50µm LOD: TMS: 2.8 µg/ml PMS and PTH: 3.3 µg/ml %RSD: 5.3% Buffer: 100 mM tris(hydroxymethyl) aminomethane (tris) pH 8
10	Determination of Sumatriptan and Promethazine in rat plasma	LC-MS/MS	Probe: -Sumatriptan: APCI probe -Promethazine: ESI probe Source: Duospray ion source Mobile phase: Methanol-water-formic acid (15:85:0.1) Stationary phase: ACE Excel 2 C18 PFP Column(2µm;2.1×100mm) Retention time: -Sumatriptan: 1.58min -Promethazine: 2.73min Flow rate: 0.7mL/min
11	Promethazine and Pholcodine in Marketed Formulation.	UV spectrophotometry	Wavelength: Promethazine: 248 nm Pholcodine: 284 nm % Recovery: Promethazine: 98.73% Pholcodine: 102.16%
12	Promethazine and Its Metabolites in Plasma	HPLC	Wavelength: 236 nm Mobile phase: methanol–0.15M ammonium acetate (pH 5.0)–water (38:50:12) Stationary phase: 5-µm CN column (250- ×4.6-mm i.d.) LOD: 1.0 ng/mL Flow rate: 0.9 mL/min
13	Promethazine Hydrochloride.	Chiral HPLC	Wavelength: 250 nm Mobile phase: 20mM PBS (pH 4.13) Stationary phase: chiral column AGC Flow rate: 0.8 mL/min
14	Promethazine Hydrochloride	^{1}H NMR spectroscopy	Wavelength: 254 nm Mobile phase:

			A- n-hexane/EtOH (95:5, v/v) B- n-hexane/tert-BuOH/ Et3N (96.5:3:0.5, v/v/v) Stationary phase:n Chiralcel OJ chiral. Flow rate: 0.5 mL/min
15	Dextromethorphan and Promethazine in Pharmaceutical Syrups	RP-HPLC	Wavelength: 280 nm Linearity range: 0.02-0.06 µg/mL Co-relation Coefficient: -Dextromethorphan: 0.9997 -Promethazine: 0.998 Mobile phase: Sodium lauryl sulphate: water: CAN (3g:400ml:600ml) Stationary phase: C8,250- ×4.6-mm, 5µm Retention time: -Dextromethorphan: 8.5min -Promethazine: 9.9min Flow rate: 1 mL/min
16	Promethazine Hydrochloride and Glycyrrhizic Acid	RP-HPLC	Wavelength: 250 nm Linearity range: Promethazine: 0. 0794-0. 3176 mg/ml glycyrrhizic acid: 0.060 3-0.241 mg/ml Co-relation Coefficient: -Promethazine: 0.999 - glycyrrhizic acid: 0.999 Mobile phase: methanol-glacial acetic acid-0. 2 mol·L-1 ammonium acetate solution (58: 1: 41) Stationary phase: Thermo BDS C18 column (250 mm × 4. 6 mm,5µm) Flow rate: 1 mL/min
17	Promethazine Hydrochloride in Its Bulk Powder and Its Dosage Form	Visible spectrophotometric	Wavelength: 412 nm Oxidizing agent: acidic potassium permanganate Linearity range: 10-80 µg/ml Solvent: water.

Conclusion

This review depicts the reported Spectroscopic and Chromatographic methods developed and validated for estimation of Sumatriptan and Promethazine. According to this review it was concluded that for Sumatriptan and Promethazine Different Spectroscopic and Chromatographic methods are available for single and combination. The mobile phase containing Acetonitrile, Water, Methanol, and Phosphate buffer were common for most of the chromatographic method to provide more resolution. For chromatographic method flow rate is observed in the range 0.7.0-1 ml/min to get good resolution time. For most of the Spectroscopic methods common solvent is Methanol and water. Hence this all methods found to be simple, accurate, economic, precise and reproducible in nature. Most of Methods were of RP-HPLC and UV absorbance detection because these methods provided with best available reliability, repeatability, analysis time and sensitivity.

Acknowledgement

The authors are thankful to DR. K. Pundarikakshudu, Director of L.J. Institute of Pharmacy, Ahmedabad, India for providing all the facilities and encouragement to carry out work.

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