

A REVIEW ON ANALYTICAL METHODS FOR ESTIMATION OF DOXOFYLLINE AND TERBUTALINE SULPHATE IN PHARMACEUTICAL DOSAGE FORM

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ABSTRACT

This review article is intended to highlight the analytical methods of Doxofylline and Terbutaline sulphate in individual as well as combined pharmaceutical dosage form. Doxofylline and Terbutaline sulphate play an important role in Asthma. Doxofylline is a new generation long acting oral methyl xanthine derivative. Terbutaline sulphate selective short acting β_2 adrenergic receptor agonist. Now these days these drugs are easily available in the market in their individual form as well as in their combined dosage form. Various analytical methods have been reported for the estimation of these drugs in their individual form as well as in their combined dosage form.

KEYWORDS: Terbutaline sulphate, Doxofylline, Asthma.

INTRODUCTION TO ANALYTICAL METHOD

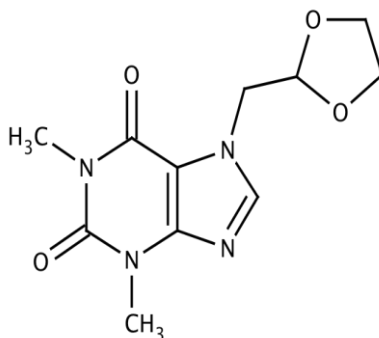
There are various analytical methods are used now these days for the estimation. Various analytical methods like potentiometer, HPLC, aqueous and non-aqueous titrations are used in the field of analysis. Aqueous and non-aqueous titrations are also used in the field of analysis. But now these days HPLC plays an important role in the field of analysis for the quantitative determination. HPLC is referred as high pressure liquid chromatography which is a separation technique based on the solid stationary phase and liquid mobile phase. Chromatography is mass transfer process involve adsorption. The active component of the column is adsorbent which is granular material of solid particles (silica, polymers). The principle of separation in the normal phase mode and reverse phase mode is adsorption in which the substances travel /separate according to their relative affinities. Now these days

HPLC plays an important role in the field of pharmaceutical analysis for the separation of various substances from the mixture of substances.

Introduction to Drug Profile

Doxofylline

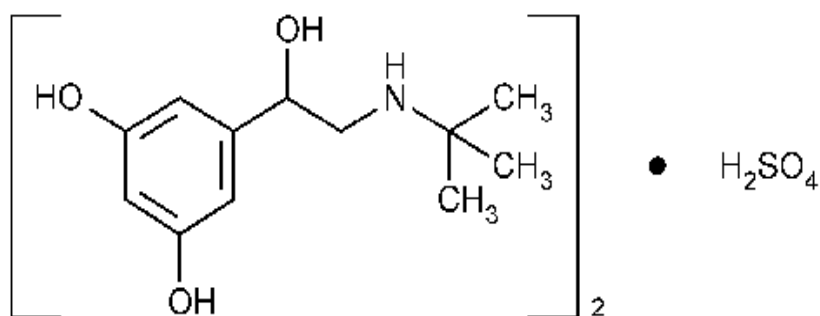
Structure



- IUPAC name: 7-(1,3-dioxolan-2-ylmethyl)-1,3-dimethylpurine-2,6-dione
- Molecular formula: C₁₁H₁₄N₄O₄
- Molecular weight: 266.257 g/mol
- Category: Bronchodilator
- Solubility: trichloromethane, soluble in water and acetone, slightly soluble in acetic acid and ethyl alcohol.
- Melting point: 141-144°C

Terbutaline sulphate

Structure



- IUPAC name: 5-[2-(tert-butylamino)-1-hydroxyethyl]benzene-1,3-diol; sulfuric acid
- Molecular formula: C₁₂H₂₁NO₇S
- Molecular weight: 323.36 g/mol

- Category: Bronchodilator.
- Solubility: Water, Acetonitrile.
- Melting point :119-122°c

Reported Methods of Doxofylline

Sr.No.	Drug	Method	Brief introduction	Reference
1	Doxofylline	RP-HPLC	Mobile phase: Acetonitrile:Phosphate buffer(50:50% v/v) pH:3 Column: HiQSil C18 Flow rate:1ml/min Wavelength:272nm	[5]
2	Doxofylline & Sertraline	RP-HPLC	Mobile phase: Acetonitrile:Water (30:70% v/v) pH:3 Column:Kromosil C18 Flow rate:1ml/min Wavelength:234nm	[6]
3	Doxofylline	RP-HPLC	Mobile phase: Acetonitrile:Formic acid (90:10% v/v) pH:3 Column:Kromosil C18 Flow rate:1ml/min Wavelength:274nm	[7]
4	Doxofylline & Montelukast sodium	RP-HPLC	Mobile phase: Methanol:Sodium phosphate buffer(75:25% v/v) pH:6.5 Column: Inertsil C18 Flow rate:1ml/min Wavelength:230nm	[8]
5	Doxofylline & Ambroxol	RP-HPLC	Mobile phase: Potassium dihydrogen orthophosphate buffer: Acetonitrile(25:75% v/v) pH:6.8 Column: Kromosil C18 Flow rate:1ml/min Wavelength:257nm	[9]
6	Doxofylline, Montelukast, Levocetizine dihydrochloride	RP-HPLC & UV	Mobile phase: Ammonia acetate buffer: Acetonitrile(75:25% v/v) pH:3.5 Column: Agilent C18 Flow rate:1ml/min Wavelength:230nm	[10]

Reported Methods of Terbutaline sulphate

Sr.No.	Drug	Method	Brief introduction	Reference
1	Terbutaline sulphate	RP-HPLC	Mobile phase: Ammonia acetate : Methanol(70:30% v/v) pH:3.5 Column: Agilent C18 Flow rate:1ml/min Wavelength:220nm	[11]
2	Terbutaline sulphate, Bromohexin, Guaifenesin	RP-HPLC	Mobile phase: Phosphate buffer:Acetonitrile(80:20% v/v) pH:3 Column: Wakosil Flow rate:1ml/min Wavelength:248nm	[12]
3	Terbutaline sulphate, Guaiphensin, Ambroxol hydrochloride	RP-HPLC,UV	Mobile phase: Mixture of Water and Acetonitrile containing sodium hexane sulphonate pH:3 Column: 5 Micron water symmetry C18 Flow rate:1ml/min Wavelength:280nm, 250nm	[13]
4	Terbutaline sulphate, Guaiphensin	RP-HPLC	Mobile phase: Methanol : Water(60:40% v/v) adjusted with phosphate buffer Column: Agilent C18 Flow rate:0.8ml/min Wavelength:275nm	[14]
5	Terbutaline sulphate, Bromhexinene hydrochloride	RP-HPLC	Mobile phase:Perchloric acid: Acetonitrile(60:40% v/v) Column: Phenomenex luna C18 Flow rate:1.5ml/min Wavelength:254nm	[14]

Mechanism of action

A fixed dose combination of doxofylline and terbutaline sulphate is available for the treatment of asthma. Terbutaline sulphate stimulates the α -adrenergic receptors of the sympathetic nervous system and has little or no effect on the adrenergic receptors.

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