



RESEARCH ARTICLE

HPTLC METHOD FOR SIMULTANEOUS QUANTITATION OF THIOCOLCHICOSIDE, PARACETAMOL AND ACECLOFENAC IN BULK DRUG AND FORMULATION

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A simple, precise and accurate HPTLC method was developed for the simultaneous estimation of thiocolchicoside (THIO), paracetamol (PAR), and aceclofenac (ACF) for the bulk drugs and their combined tablet dosage form. The method involved TLC on aluminum plates precoated with silica gel using toluene:acetone:methanol:formic acid 8:2:2:1 (v/v/v/v) as mobile phase. Densitometric scanning was performed at 263 nm. The method was validated as per ICH guidelines. R_f values of 0.13±0.03, 0.42±0.04 and 0.57±0.02 were obtained for THIO, PAR and ACF respectively. Precision, accuracy and specificity were in accordance with ICH guidelines.

Key words: HPTLC, Densitometry, Validation, Thiocolchicoside, Paracetamol, Aceclofenac.

INTRODUCTION

A combination of thiocolchicoside (THIO), paracetamol (PAR) and aceclofenac (ACF) is used in the treatment of musculoskeletal disorders. THIO allosterically inhibit strychnine sensitive glycine receptor in brain stem and spinal cord, and this may provide a possible mechanism for the myorelaxant activity. THIO has high affinity for [³H] strychnine binding sites (Balduini *et al* 1999; Cimino *et al* 1996). PAR (*p*-hydroxy acetanilide) has analgesic and antipyretic effects. The mechanism of action of PAR is inhibition of the cyclooxygenase enzyme and the prostaglandin synthesis in the central nervous system (Graham and Schott, 2005) and its direct activity on the centre for the body temperature regulation in the hypothalamus (Dollery, 1999). ACF inhibits the synthesis of inflammatory cytokines interleukin (IL)-1, tumor necrosis factor and prostaglandin E₂ (PGE₂) production which is responsible for its

anti-inflammatory and analgesic effects.

Analytical techniques have been remained as reliable methods for estimation of drugs alone or in combination (Shrivastava *et al* 2011; Basaveswara Rao *et al* 2012; Singh *et al* 2013; Singh and Dahiya, 2014). In literature, few analytical methods are described for determination of THIO like HPLC (Rosso and Zuccaro, 1998; Vargas *et al* 2001), LC-MS method for quantitation in human plasma (Ferrari, 2001; Sutherland *et al* 2002) and HPTLC method for quantitation.

To date, there have been no published reports about the simultaneous quantitation of THIO, PAR, and ACF by HPTLC in bulk drug and in pharmaceutical dosage forms. Keeping in mind advantages of HPTLC method in pharmaceutical analysis, an attempt was made to develop and validate simultaneous method for the quantitation of THIO, PAR, and ACF by HPTLC in bulk drug and in pharmaceutical dosage forms