Simultaneous Determination of Montelukast as Sparing Therapy with Some Inhaled Corticosteroids in Plasma of Asthmatic Patients

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Abstract:

Montelukast (MKST) is a leukotriene receptor antagonist that has been concomitantly used with inhaled corticosteroids (ICS) for its steroid-sparing effect in the long-term management of asthma. However, the simultaneous determination of MKST, when used as ICS tapering therapy, with ICS in human plasma has not yet been reported. A fast and efficient reversed phase monolith HPLC method was developed for simultaneous determination of MKST with some ICS in plasma of asthmatic patients. The separation was achieved on monolith reversed phase column by isocratic mode at a flow rate of 1.0 ml min⁻¹ using a mobile phase consisted of a mixture of acetonitrile and 10 mM phosphate buffer adjusted to pH 3.5 (40:60, v/v) and detected at 240 nm. Betamethasone dipropionate (BDP) was used as the internal standard. All the studied ICS and MKST were efficiently separated within less than 6 min. The obtained linearity range for the developed HPLC method was 0.03-10 µg ml⁻¹ with correlation coefficients > 0.9995 and the detection limits were 0.009-0.016 µg ml⁻¹ in plasma for all the studied drugs. The method was validated in agreement with the requirements of US-FDA guideline and was recommended for the target applications. The method is valuable for investigations concerned with the effective tapering of ICS therapy with MKST in patients with chronic asthma in clinical practice without loss of asthma control.

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