In the present study, an attempt has been made to evaluate the effect of hydrophilic and hydrophobic polymers on the release profile of drug from matrix system. Salbutamol sulphate, an anti-asthmatic agent, was used as a model drug to evaluate its release characteristics from different matrices. Matrix tablets of salbutamol sulphate were prepared by direct compression process using hydrophobic polymer ethyl cellulose (F1-F4) and hydrophilic polymer HPMC (F4-F8). Release kinetics of salbutamol sulphate from these sustained release matrices in distilled water using USP paddle method with sinker for 12 h were studied. Statistically significant differences were found among the drug release profile from different formulations. The release mechanism was explored and explained with zero order, first order, Higuchi and Korsmeyer equations. The results generated in this study showed that the profile and kinetics of drug release were functions of polymer type, polymer level and physico-chemical properties of the drug. The present study concluded that the hydrophilic matrix tablets of formulation F8 prepared using HPMC showed drug release of 91.32% and can be employed as twice-a-day oral sustained release drug delivery system whereas hydrophobic matrix tablets of formulation F4 prepared using ethyl cellulose showed drug release of 64.2% and can be employed as once a day oral sustained release drug delivery system. Therefore, ethyl cellulose is suggested as an ideal polymer for production of directly compressed matrix sustained release salbutamol tablets.

Key words: Salbutamol sulphate, Matrix tablets, HPMC, Ethyl cellulose, Sustained release.

INTRODUCTION
Asthma is a common chronic inflammatory disease characterized by variable and recurring symptoms, airflow obstruction, and bronchospasm with wheezing, coughing, chest tightness, and shortness of breath. These acute episodes may be triggered by such things as exposure to an environmental stimulant (or allergen), cold air, exercise or exertion, or emotional stress. In children, the most common triggers are viral illnesses such as those that cause the common cold. During asthma attacks, the smooth muscle cells in the bronchi constrict, the airways become inflamed and swollen, and breathing becomes difficult. This is often referred to as a tight chest and is a sign to immediately take medication (Nayak et al 2010). Salbutamol sulphate is a white or almost white odorless powder. It is soluble in four parts of water; slightly soluble in 95% alcohol, chloroform and ether. It is chemically described as 1-(4-hydroxy-3-hydroxymethylphenyl)-2-(tert-butyl amino) ethanol sulphate. The elimination half life of inhaled or oral salbutamol is between 2.7 and 5 h. Its short elimination half life calls for frequent daily dosing (2 to 3 times).