THEME OF THIS INVESTIGATION

Theme of this Investigation :

Considerable work has been done on the synthesis of smectogenic and nematogenic compounds. A large number of homologous series exhibiting smectic and nematic phases have been synthesised and studied to investigate and establish relationship between molecular structure and mesomorphism. Different homologous series with varying molecular entities have been investigated to study the influence of molecular structures on liquid crystalline properties and phase transitions. No such systematic study seems to have been carried out for the cholesteric compounds. With a view to study the effect of molecular structure and dimensions on the liquid crystalline properties and to establish the relationship between molecular structure and mesomorphism in the cholesteric phase, the present study was undertaken. Recent studies have shown that cholesteric phase is nematic in type. In an attempt to corelate the effect of chemical constitution on mesomorphism in cholesteric and nematic phases cholesteric series are synthesized of such molecular structure and dimensions corresponding of which have been studied in the nematic phase. Five cholesteric series with different arene nuclei in the side chain at 3β position of the cholesterol molecule are synthesized and their mesomorphic properties studied. Their thermal stabilities are compared with those of other related series.

Further, with a view to enhance our existing knowledge on nematic mesomorphism, three nematogenic homologous series are also synthesised and their mesomorphic behaviour studied. The thermal stabilities of these series are compared with those of other related series.