SCOPE AND OBJECTIVES
OF THE
PRESENT INVESTIGATION
It is clear from the survey of the literature presented in the preceding pages that we have an idea of the fatty acid composition of the different species of mycobacteria. The human pathogenic strain \textit{M. tuberculosis} \textit{H}_{37}Rv synthesizes mycolic acids which are more complex than those present in other species of mycobacteria. Furthermore, virulent strain of tubercle bacilli like \textit{M. tuberculosis} \textit{H}_{37}Rv synthesize phthionoic acids which have not been reported to be present in non-pathogenic strains. Studies on the fatty acid synthetases have so far been carried out only with non-pathogenic strains like \textit{M. phlei} (Brindley et al., 1969), \textit{M. tuberculosis} \textit{H}_{37}Ra (Pierard et al., 1963) and DCV (Tinder et al., 1964). However, there are no reports so far on the fatty acid synthetase of the human pathogenic strain. Probably the virulence of the organism has been a deterrent. With a view to understand the mechanism of biosynthesis of fatty acids peculiar to the pathogenic strains of tubercle bacilli, the fatty acid synthetase of \textit{M. tuberculosis} \textit{H}_{37}Rv has been purified and some of its properties studied for the first time. Simultaneously, a comparison has also been made with purified fatty acid synthetase of a saprophytic strain, namely \textit{M. smegmatis}.

Since a heat and acid-stable stimulating factor (S.F.),
polysaccharide in nature, was found to regulate fatty acid synthetase of \textit{H. phlei}, S.F. from \textit{M. tuberculosis} \textit{H}_37\textit{Rv}
and \textit{M. smegmatis} were purified. Characterizations of the S.F. from both the strains were undertaken in view of the
fact that S.F. from \textit{H}_37\textit{Rv} was heat-stable but acid-labile.

The fatty-acid-synthetases of \textit{M. tuberculosis} \textit{H}_37\textit{Rv}
and \textit{M. smegmatis} were purified and some of their properties
and the types of fatty acids synthesized by them were studied.

The effect of antitubercular drugs, on fatty acid
synthetase, with particular emphasis on \textit{INH} was also investigated.

Finally desaturase enzyme, responsible for the
synthesis of unsaturated fatty acids was studied in the crude
extracts of both \textit{M. tuberculosis} \textit{H}_37\textit{Rv} and \textit{M. smegmatis}. 