Introduction

Fats and oils are renewable resources. This is one of the reasons why they deserve worldwide attention. In recent years they have assumed importance due to their increasing use in food and nutrition on one hand and non-food industrial uses as oleochemical intermediates on the other. Dietary fat is more important since its calorie density is more than twice to that of proteins and carbohydrates. Moreover, the essential fatty acids are well known to have link with prostaglandin synthesis and the involvement of lipoprotein in the structure of cell membranes. These are considered as key roles played by fatty compounds in the human nutrition.

In recent years the chemistry of oils and fats based on multifunctionalities of fatty acids has received much attention. The functionalization of the alkyl chain or derivatization of the chain functional groups could provide a host of new fatty chemicals as alternative sources to those obtained from petro-chemicals. Thus natural oils and fats, being renewable in nature, are indispensable feed stocks for oleochemical industry in future. A variety of fatty acids derived from minor seed oils, when derivatized suitably are diversely used as lubricants, additives, greases, cosmetics, pharmaceuticals, insecticides, fungicides, etc.

Recognizing these and other potentialities of oils and fats, it is high time for oil technologists to evolve various methods
to improve the uneconomic functioning of old unit in the vegetable oil industry and to have new oilseeds processing plants on more modern lines in increasing the production of oilseeds conforming with the needs of world in general and of developing countries like India in particular.

Oils and oilseeds and their derivatives constitute about 13% of the total cost of living index and the quantum of imports value at about 1200 crores per annum constitute our total import bill. It clearly indicates that productivity does not match with increase in population. In the 20 point programme top priority has been given to find ways and means for augmenting all the available resources of seed oils. Besides cultivation of traditional oilseeds there is abundance of minor oilseeds of forest origin. There is a wide potential of agrichemicals which could be obtained from the unexplored minor oilseeds rich in specific kinds of fatty acids. Thus chemical screening of oil-yielding plant species is important for a country like India which abounds in forest flora.

During the past decade, increased attention has been directed to the newer sources as the non-traditional sources of vegetable oils obtainable from minor oilseeds and the oleochemicals synthesized from major fatty acids, which could be used by oleochemical industry. Therefore, keeping in view the current researches on oils and fats based on today's needs, the investigations in this thesis covers the above two aspects, i.e., phytochemical screening of seed oils and synthesis of new fatty acid derivatives.