

PROJECT REPORT ON

**ISOLATION AND CHARACTERIZATION OF  
THERAPEUTIC INHIBITORS FROM NON-EDIBLE  
SEEDS**

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## ABSTRACT

Enzyme inhibitors are one of the tools in solving problems of health disorders. Many researches are going on to screen effective and economic sources for enzyme inhibitors. Present work is an attempt for the same. Obesity is becoming one of the greatest threats to global health in this millennium, with more than 1 billion overweight adults and of those, at least 300 million are clinically obese. [1] Pancreatic lipase plays a key role in the efficient digestion of triglycerides and absorption from the small intestine to the enterocytes, and if somehow this initial movement of triglycerides from the intestinal lumen is blocked, hyperlipidaemia can be prevented. In this project, the metabolites obtained from the seeds of *Terminalia belerica* (local name- Shanthikai) which is a non edible seed, was tested for their inhibitory activity on pancreatic lipase.

Crushed and powdered *T.belerica* was extracted by Soxhlet apparatus. Various solvents were used to extract the seeds to determine the most suitable solvent, which inhibits the lipase activity to the maximum. This was estimated by conducting inhibitory assay. 100 µl ethyl acetate extract was seen to inhibit the chicken pancreatic lipase to the greatest extent. To eliminate the effect of solvent in the inhibitory assay, it was evaporated and the pure extract, dissolved in phosphate buffer was used for the inhibitory assay. Biochemical tests were conducted in order to determine the secondary metabolites present in the ethyl acetate extract of *T.belerica*. Tannins, Alkaloids and Terpenoids were found to be present in the ethanol, ethyl acetate and chloroform extract. The ethyl acetate extract of *T.belerica* was run on TLC plates and 3 distinct spots representing 3 separated metabolites were observed.

The results obtained, show that these seeds have the potential to be a therapeutic inhibitor, since they can inhibit the activity of pancreatic lipase and can thus help in combating obesity. Lipase was extracted from oil metabolizing microbes and from chicken (*Gallus domesticus*) pancreas and was used for lipase activity assay by titration methods.