

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
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**PROJECT REPORT ON
(10CH85)**

**“ STUDIES ON MICROWAVE-ENZYME ASSISTED METHOD FOR
EXTRACTION OF MAIZE (*Zea mays L.*) SEED OIL ”**

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**BACHELOR OF ENGINEERING
IN
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ABSTRACT

Oil seeds not only are reservoirs of oils & fats, but are also good sources of proteins, carbohydrates & pigments which are good sources of animal feed stocks. Good oil and fat recovery procedures produce undamaged oils free from others, obtaining as much yield as possible, and producing low-fat residues (meals) of high economic value. Most Oilseeds usually have oil encased in minute “glands” which are deeply embedded inside fibrous structures. Pretreatments change the morphological structure of oil seeds and increases oil extraction rates & yields. Oil seeds, therefore, require some kind of mechanical treatment and conditioning sometimes cooking and drying, which help to release the oil. Pretreatment steps are not universal but tailor made to specific variety of seed used.

At present most of vegetable oils are produced at first by mechanical pressing by the use of oil expellers and later by solvent extraction at most of oil refineries. As a result oil extraction has become as a capital intensive operation and uneconomical one. To make oil recovery attractive, pre-treatment of oil seeds seems attractive as it requires less capital and is reported to increase the yields of oils significantly. Though numbers of processes are reported “microwave pretreatment” is found out to be attractive, as this offers multiple

Maize seeds were collected from local market and analyzed for their moisture contents. Maize seeds were sun dried. Seeds were ground and screened. Using Soxhlet extractor maize seed oil was separated. Free fatty acid (FFA) content of oil was determined.

Oil yields of dried seeds were found to be higher but oil was of low quality indicating that thermal treatment improves oil yields. A literature search revealed temperature (T) and time of exposure (τ) of oil seeds influence quality and quantity of oils. Microwave pretreatment is reported to have advantages over conventional methods. A readily available microwave oven is used and experiments are conducted for various power ratings and durations. Yield and quality of oil produced are determined and reported. Results of studies obtained are presented and discussed.