Project Report on

"Variation in Fats and Plant Oil"

Submitted By

M.Sc. SEM-III Students

(Roll No.32 to 37)

Guided By

Dr. S. M. Dave

Associate Professor

Sir P.T.Science College, Modasa

Submitted To

P. G. Department of Chemistry

Sir P.T.Science College, Modasa

SIR P.T.SCIENCE COLLEGE, MODASA

Managed by

THE M.L.GANDHI HIGHER EDUCATION SOCIETY MODASA

Affiliated to Hemchandracharya North Gujarat University, Patan
Accredited with 'B++' Grade (2.83 CGPA) by NAAC in the 2nd Cycle

Certificate

This is to certify that project report entitled **"Variation in Fats and Plant Oil"** are carried out by students mentioned below. They have been satisfactorily completed their project work for academic year 2022-23. The project has been approved as it satisfies the academic requirement in respect of project work prescribed for the Master of Science.

Roll no.	Student's name
32	Upadhyay Niravkumar J.
33	Patel Pareshkumar A.
34	Patel Pinky N.
35	Patel Priyaben Shivabhai
36	Raval Priyankaben L.
37	Patel Ruchiben Dhulabhai

Place: Modasa

Signature of Guide

(Dr. S.M.Dave)

Signature of P. G. In charge

DR. M.P. GONGIWALA
HEAD
P.G. DEPATMENT OF CHEMISTRY
SIR P.T. SCIENCE COLLEGE
MODASA

(Dr. M.P. Gongiwala)

❖ Introduction

Much like proteins, lipids (fats and oils) are often concentrated in seeds and used as storage products. Although most plants use starch for storage, many including nuts,legumes and some mustards store appreciable amounts of lipids in their seed. Many plants with lipid rich seeds or fruits are used as a source of vegetable oil. These vegetable oils have been used in a number of diverse ways including as diesel fuels (biofuels), lubricants, cleansers, sealants, plastics, cooking and medicines. Lipids are a class of organic molecules called triglycerides. A lipid is composed of a glycerol molecule with three fatty acid chains attached to it. The nature of the fatty acids (e.g. the length and number of carbon: carbon double bonds) determines the nature of the lipid. Monounsaturated and polyunsaturated oils are those with one or more C:C double bonds, respectively. Saturated fatty acids have no double bonds. The degree to which oil is unsaturated is of some important health considerations. Saturated lipids have been linked to cardiovascular disease.

❖ Practical Work

Procedure for Lipid Staining

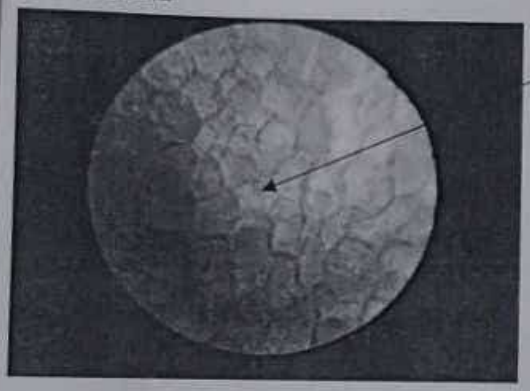
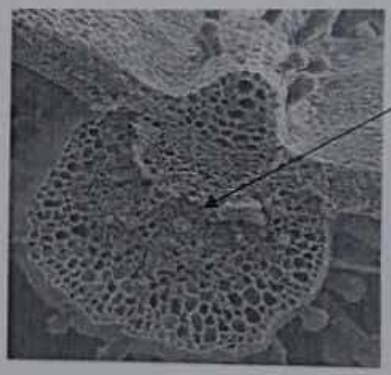
1. Variation in Fats and Plant Oils

1. Sudan IV solution is only absorbed by lipids
2. Obtain seeds provided today in lab and, using a sharp razor blade (take care!), cut seeds in thin slices (as thin as possible) and float the slices in a small amount of water for 5-10 minutes to hydrate.
    a. peanuts
    b. walnut
3. remove the slices from the water and place them on a microscope slide
4. add a small drop of Sudan IV solution to your slice
5. after a few minutes, observe under scope (low power) for oils (they should turn red)
6. use the table below to record your observations

Requirements

1. Sudan IV solution
2. Peanuts
3. Walnut
4. Microscope

Observation

Species	Species
Sketch  Peanut	Sketch  Walnut

Results : walnut and peanut seeds observe in microscope for lipid sketch

Procedure for Degree Unsaturated Oil content

1. measure out 5 ml of the different vegetable oils present in lab today into clean, labeled test-tubes
   a. olive
   b. peanut
2. slowly add 10 drops of IKI solution to each tube
3. cover the tubes with parafilm and gently mix the solutions
4. place the tubes in a test-tube rack and mark the time
5. check every 30 minutes for any color change (unsaturated oils will become clearer
   with time)
6. Record your observations (relative color change from red to clear) in the table below

Requirements

1. I KI Solution (Luggeol solution)
2. Olive oil
3. Peanut oil

Observation

Oil	0 Min	60 Min	720 Min	Saturated or Unsaturated
Olive oil				Unsaturated
Peanut oil				Less saturated

Results: olive oil is unsaturated and Peanut oil is less saturated