EXPERIMENT 3: EXTRACTION OF PAPRIKA PIGMENTS FROM PAPRIKA

AN INTRODUCTION TO SOLID-LIQUID EXTRACTION, REFLUX AND DISTILLATION TECHNIQUES.
CAROTENOID COMPOUNDS

α-CAROTENE

β-CAROTENE

CAPSANTHIN

CAPSORBIN
PART I: SOLID-LIQUID EXTRACTION

- INVOLVES USING A LIQUID TO REMOVE/EXTRACT A COMPOUND OR GROUP OF COMPOUNDS FROM A SOLID.

- HEATING ACCELERATES THE RATE OF THE EXTRACTION PROCESS.

- HEATING UNDER REFLUX ALLOWS EXTRACTION AT ELEVATED TEMPERATURES WITHOUT LOSS OF SOLVENT THROUGH EVAPORATION.
PART 2: GRAVITY FILTRATION

GRAVITY FILTRATION ALLOWS THE USED PAPRIKA POWDER TO BE SEPARATED FROM THE DICHOLORMETHANE SOLUTION CONTAINING THE EXTRACTED CAROTENOID COMPOUNDS.
PART 3: SIMPLE DISTILLATION

- Once liquid starts to collect in the receiving flask, record the boiling point (constant temperature) and atmospheric pressure.

- Stop the distillation when only 2-3mL of residue remains in the distillation flask.

- Record the volume of DCM distillate. Use a Pasteur pipette to transfer the red-brown residue to a labelled, pre-weighed vial.
The boiling point of a liquid is the temperature at which the vapour pressure of that liquid equals the external (atmospheric) pressure.

The normal boiling point of a liquid can be found using the equation below.

\[ \text{B.P.}_{760\text{mmHg}} = \text{B.P.}_{\text{OBSERVED}} - 0.05(\text{A.P.}\text{mmHg} - 760\text{mmHg}) \]
THE DICHLOROMETHANE DISTILLATE CONSTITUTES HALOGENATED WASTE.

ALL ORGANIC KIT GLASSWARE MUST BE LEFT CLEAN AND DRY.

THE PERCENT RECOVERY OF THE PIGMENTS WILL BE DETERMINED NEXT WEEK, ONCE RESIDUAL DCM HAS EVAPORATED.

THERE IS NO LABORATORY REPORT REQUIRED FOR EXPERIMENT 3.