

EXPERIMENT NO. 9

EXTRACT DIOSGENIN FROM DIOSCOREA AND IDENTIFY BY THIN LAYER CHROMATOGRAPHY METHOD (TLC)

AIM OF THE EXPERIMENT:

To extract Diosgenin from dioscorea and identify by Thin layer chromatography method (TLC)

REQUIREMENTS:

1. Chemicals: Methanol, ethanol, silica gel, mineral acids, acetone, hexane.
2. Apparatus: Beaker, Stirrer, Measuring Cylinder, glass plate, refrigerator, reflux condenser, etc.

Theory:

Diosgenin is a steroidal saponin glycoside obtained from the dried tubers of *Dioscorea deltoidea* and other species of *Dioscorea* belonging to family *Dioscoreaceae*. Diosgenin, a phytosteroid saponin, is the product of hydrolysis by acids, strong bases, or enzymes of saponin extracted from the tubers of *Dioscorea*.

Diosgenin is used for the commercial synthesis of cortisone, pregnenolone, progesterone, and other steroid products and interestin the treatment of various types of disorders such as cancer, hypercholesterolemia, inflammation, and several types of infections. Due to its pharmacological and industrial importance, several extraction and analytical procedures have been developed and applied over the years to isolate, detect, and quantify diosgenin, not only in its natural sources and pharmaceutica compositions, but also in animal matrices for pharmacodynamic, I pharmacokinetic, and toxicological studies.

EXTRACTION PROCEDURE:

The coarse powder of the accurately weighed quantity of dioscorea tubers refluxed with 2N mineral acid (HCL/ H₂SO₄/ HNO₃) for 2 hr., filter and dry the marc and again extract this dry mass with methanol for 6 hrs. Filter and evaporate the solvent to 14 th of its volume. keep the concentrated liquid in a refrigerator for 2 hr to form the crystals of diosgenin calculate the percentage yield.

Calculation

$$\% \text{ yield} = \frac{\text{Practical yield}}{\text{Theoretical yield}} \times 100$$

$$= \frac{1.55}{50} \times 100 = 3.1\%$$

$$R_f \text{ value} = \frac{\text{Distance travelled by solute}}{\text{Distance travelled by solvent}}$$

$$= \frac{34}{50} = 0.68$$

48


IDENTIFICATION BY TLC:

Diosgenin is identified by thin layer chromatography by using silica gel as stationary phase and Acetone: hexane (1:4) as mobile phase. After drying the TLC plate, diosgenin is detected at 0.51 Rf value by reagent containing 25% H₂SO₄ in methanol.

RESULT:

The percentage yield of diosgenin from Dioscorea was found to be 3.1%.

The Rf value of extract of diosgenin from Dioscorea was found to be 0.68


Signature of Faculty

Name: - Jensh Patel
Regd. No: - PH03252052
Group: - C

44