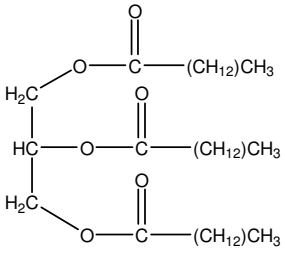
1. EXPERIMENT # 6 GRACE KIM
   8/6/2007 MIKE HALL
   NATURAL PRODUCT ISOLATION: TRIMYRISTIN

2. PURPOSE AND INTRODUCTION

The technique of extraction for isolating a natural product was used to isolate trimyristin isolated from nutmeg.

3. EXPERIMENTAL PROCEDURES

Table of Reagents:

Compound	*Molecular Weight*	*Physical Properties*
Trimyristin 	723 g/ mol	m.p. = 55-56^{0}C,
Diethyl ether		solvent, highly flammable
Acetone		solvent, highly flammable.

Solvent extraction

3.98-g of ground nutmeg and 20-mL of diethyl ether was heated under gentle reflux for 30-min and then cooled.

Isolation

The mixture was gravity-filtered to remove solids, and the diethyl ether solvent removed from the filtrate by rotary evaporation. The resulting brownish-yellow oil was dissolved in 3 to 4-mL of acetone allowed to stand at room temperature for 30-minutes and then placed in an ice-bath for an additional 15-min to induce crystallization of the trimyristin. The crystals were collected by vacuum filtration and air-dryed.

4. RESULTS AND OBSERVATIONS

mass, nutmeg	3.98 g
mass, filter paper	0.36 g
mass, filter paper + trimyristin	0.62 g
mass, trimyristin	0.26 g
% mass of nutmeg	6.5%
melting point, trimyristin (expected 55-56^{0}C)	52^{0}C (fast); 53-54^{0}C (slow)

5. CONCLUSIONS

The melting point of the trimyristin may have been slightly lower than expected because the sample was only air-dryed for a very brief period of time.

6. ANSWERS TO ASSIGNED PROBLEMS

1. Diethyl ether is chosen as an extraction solvent because it yields trimyristin in high purity without contamination by other structurally related esters of glycerol and fatty acid. Trimyristin is much more soluble in diethyl ether than in acetone at lower temperatures, which is used to crystallize the trimyristin in this experiment.
5. Pure tripalmitin has a mp 66-67^{0}C. The oil that was a mixture of tripalmitin and trimyristin was difficult to crystallize because the presence of an impurity depresses the melting point (this is a colligative property).