

***Getting Fat & Water to mix---***

***Bile acids: The Enigma of Emulsification ---***

## *Emulsifying fat--*

Toluene: stained with *Sudan Red* to show the oil layer

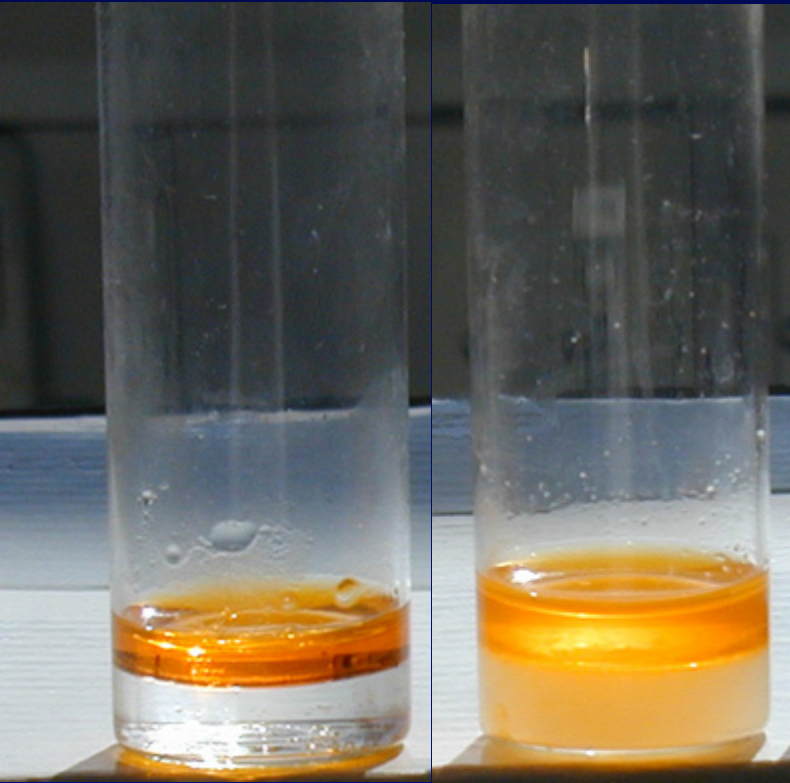


Toluene-*SR*

Water

## Emulsifying fat--

Toluene: stained with *Sudan Red* to show the oil layer



Toluene-*SR*

Water

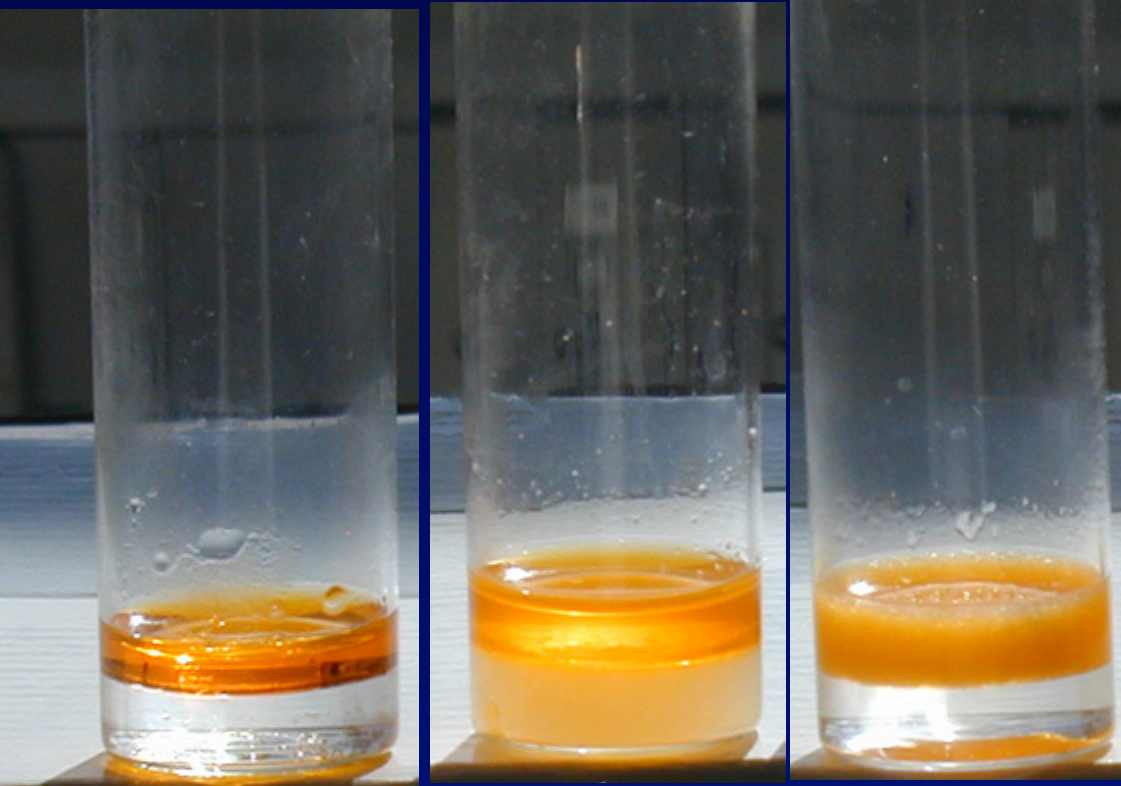
Toluene-*SR*

Water

Stearic acid

## Emulsifying fat--

Toluene: stained with *Sudan Red* to show the oil layer



Toluene-*SR*

Water

Toluene-*SR*

Water

Stearic acid

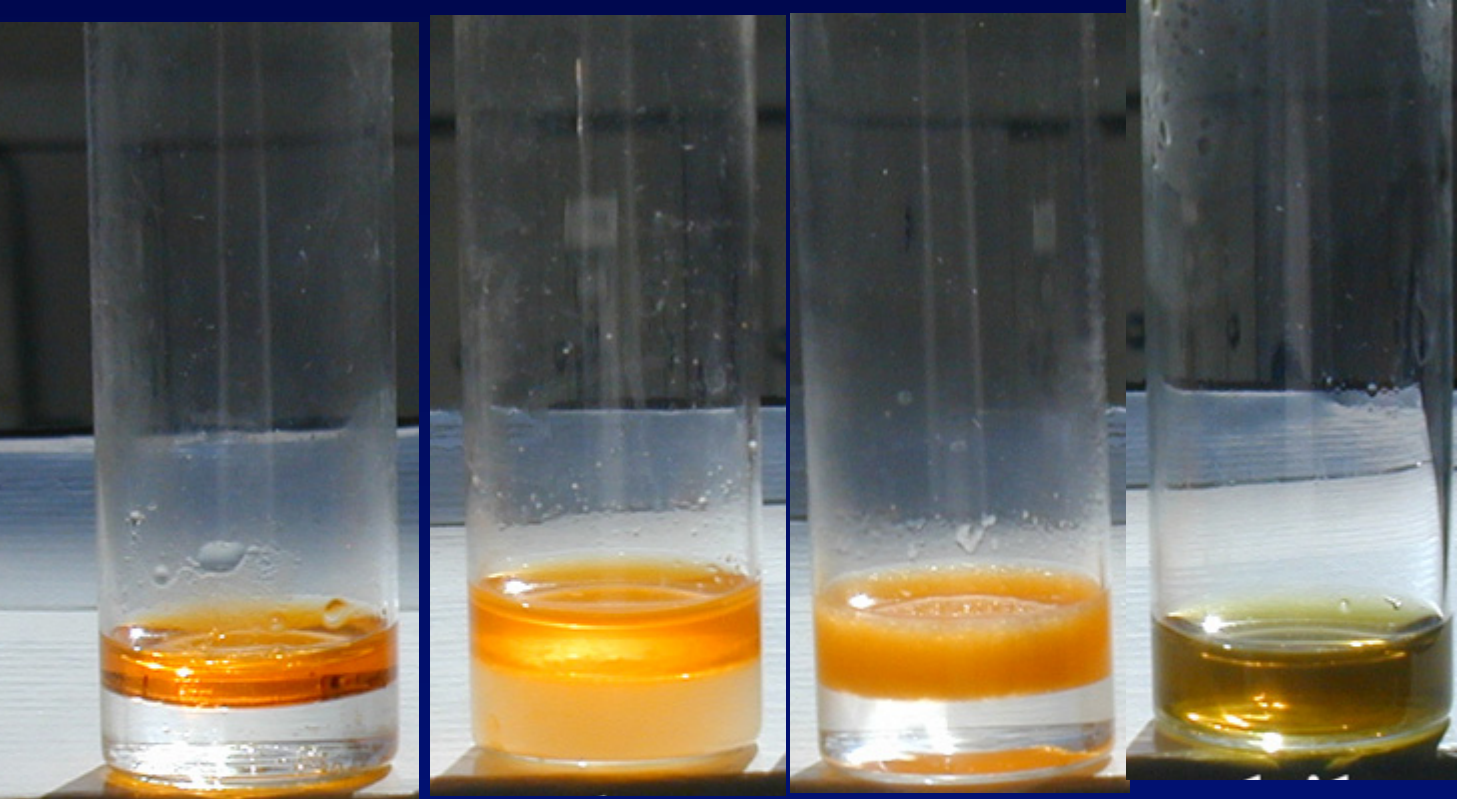
Toluene-*SR*

Water

Cholic acid

# Emulsifying fat--

Toluene: stained with *Sudan Red* to show the oil layer



Toluene-*SR*

Water

Toluene-*SR*

Water

Stearic acid

Toluene-*SR*

Water

Cholic acid

Water

Bile

Gift from Mr. Manfred Lambertz

UHCW

Gift from Prof. Charles Stirling FRS



# Emulsifying fat--

Toluene: stained with *Sudan Red* to show the oil layer



Toluene-*SR*

Water



Toluene-*SR*

Water

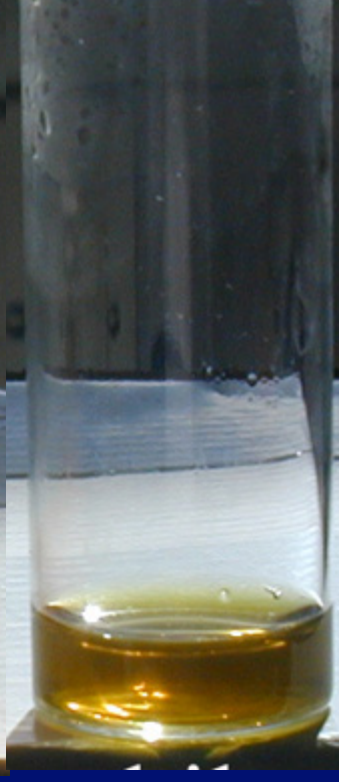
Stearic acid



Toluene-*SR*

Water

Cholic acid



Water

Bile



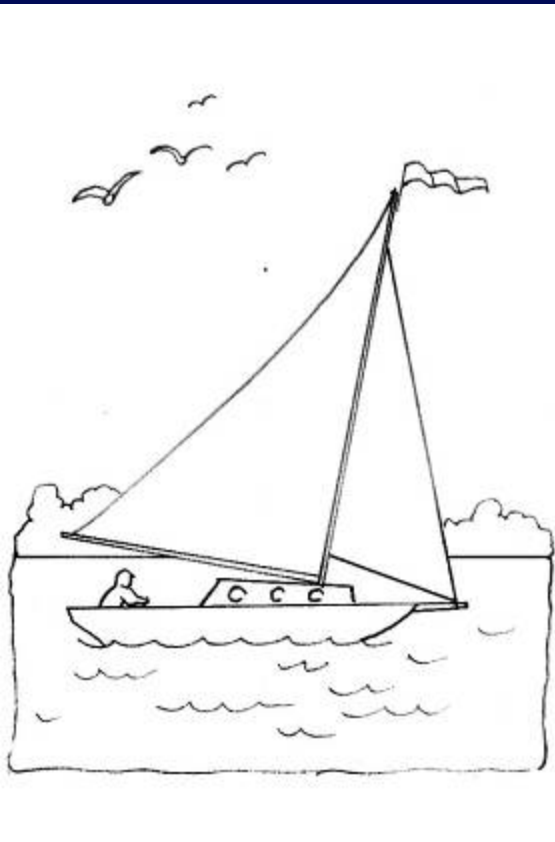
Toluene-*SR*

Water

Bile

# Bile acids – and sailing boats??!

“Hydrophobic” surface



“Hydrophilic” surface

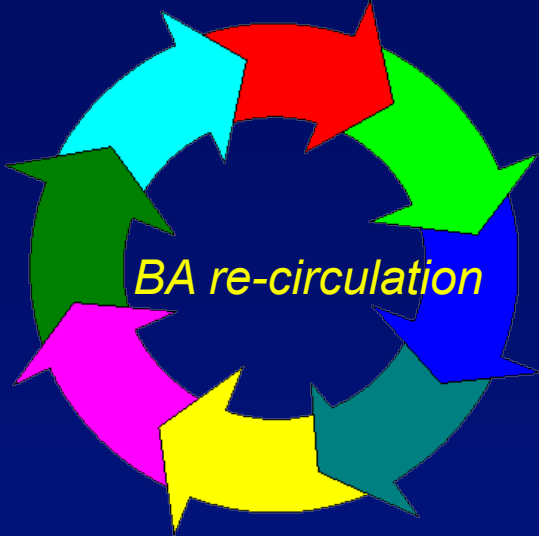
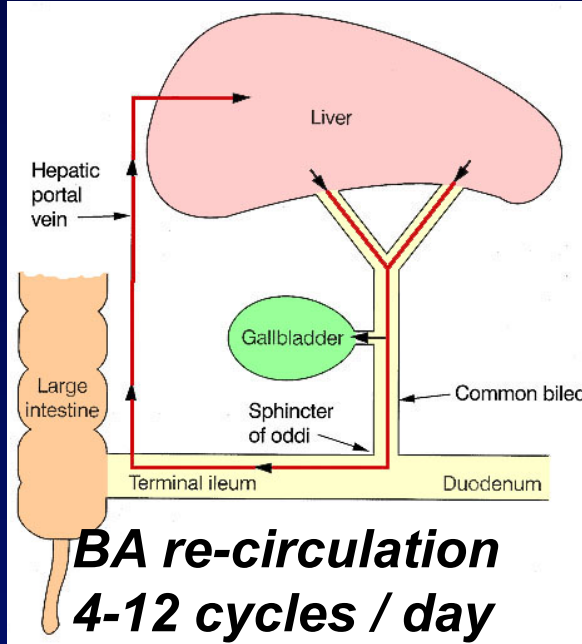
*--stays at the interface between water and air*

# Bile acids: The journey

BA in gut lumen: ~3g

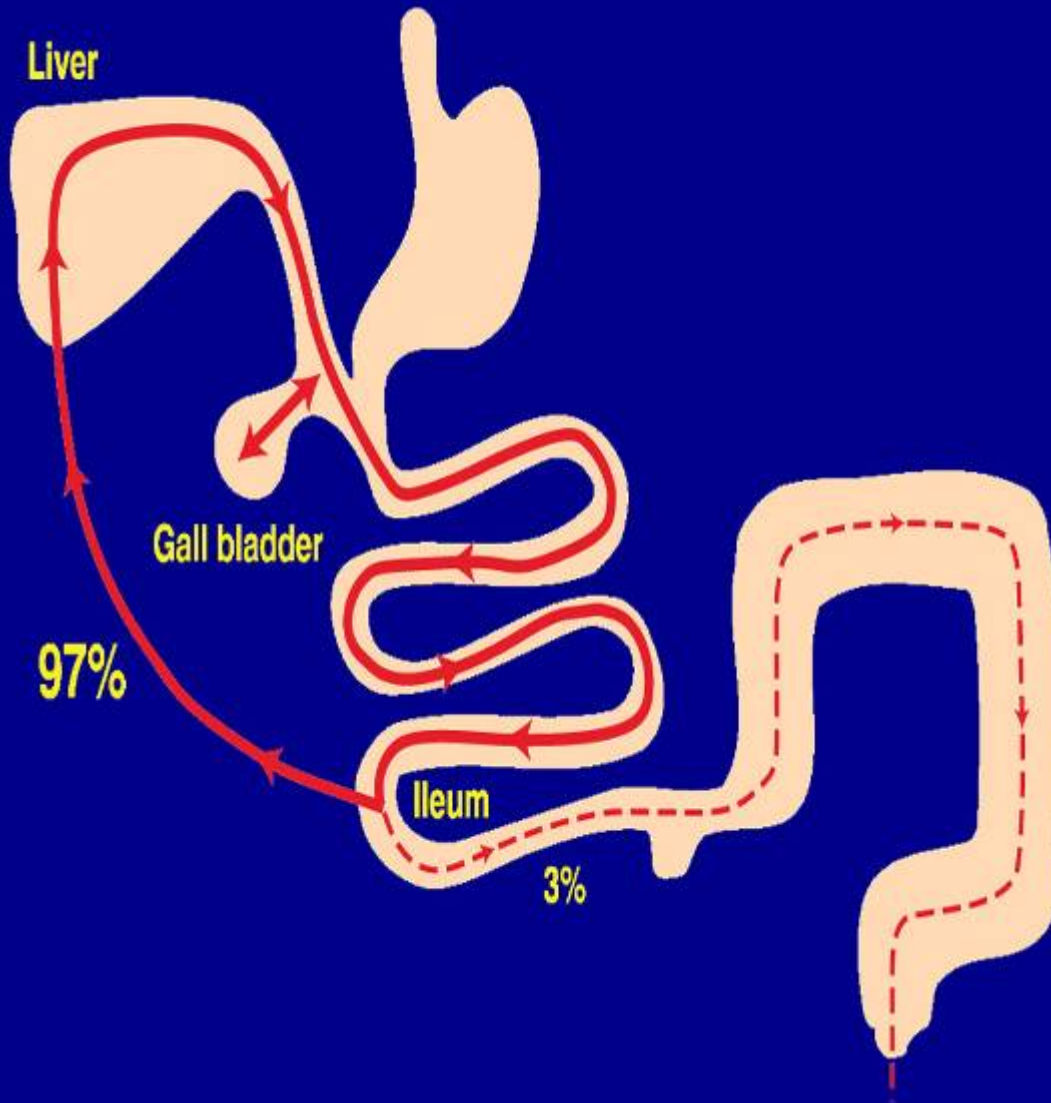
Fecal loss: ~600 mg daily

BA daily need: ~12-36g





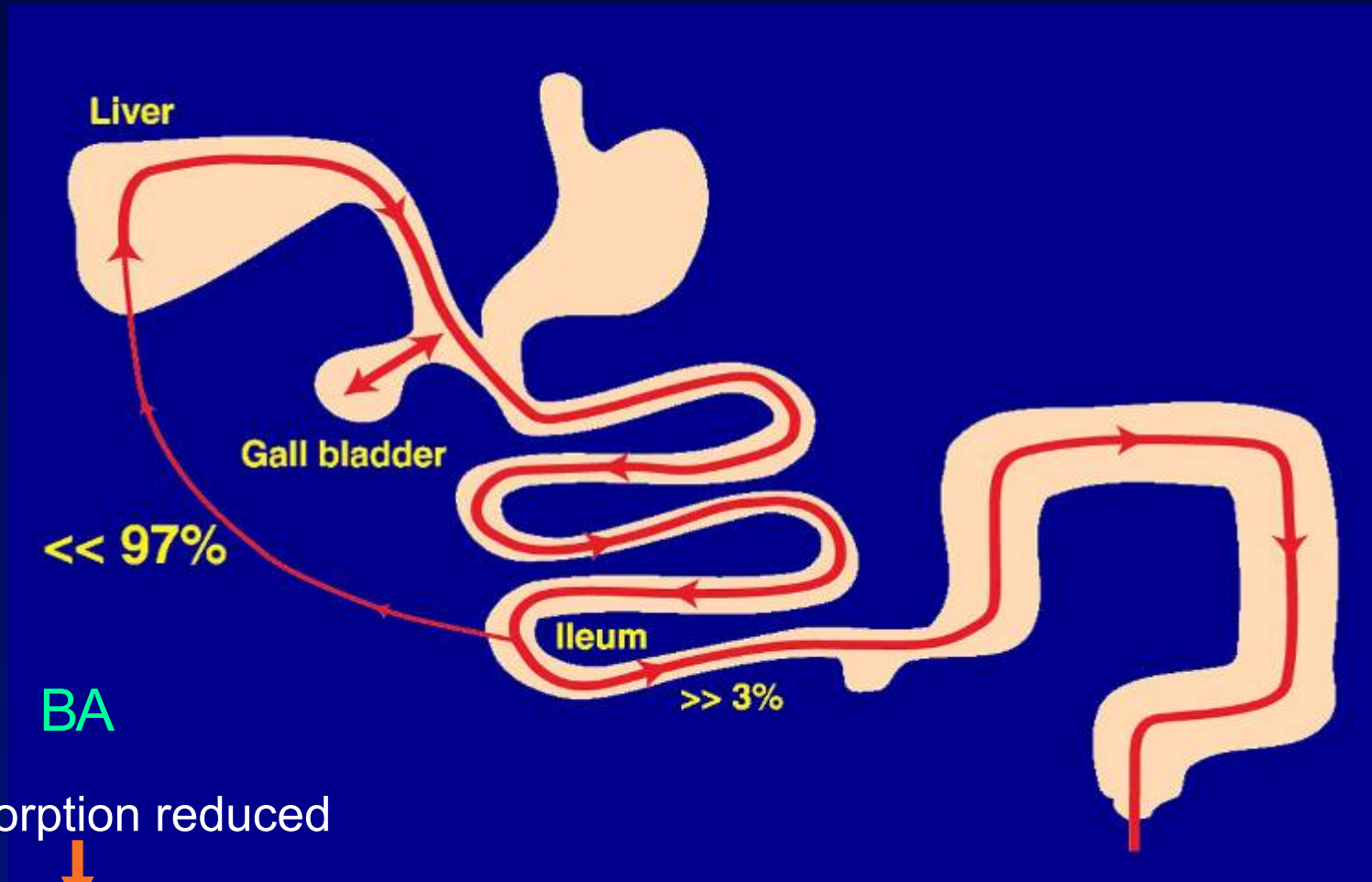
## Bile acid absorption: In health



BA

- 95-98% absorbed in terminal ileum
- Recirculated up to x 4-12 in 24 hours

## Bile acid absorption: In malabsorption



•TI absorption reduced

•Excess unabsorbed BA spills into colon

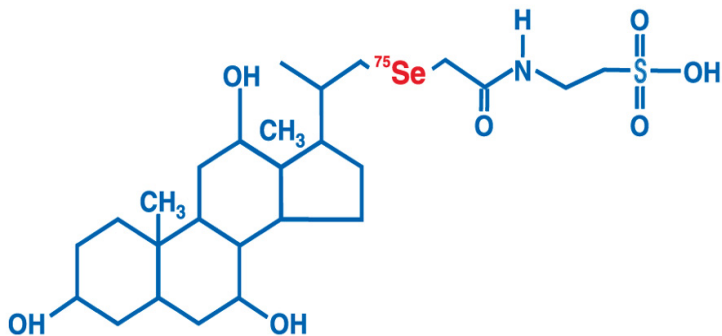
•Interferes with calcium-mediated water & electrolyte absorption: *Net fluid loss*



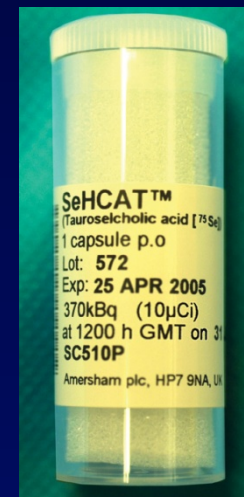
**Watery** diarrhea

# The SeHCAT retention test

23-<sup>[75Se]</sup> Selena-25-HomoCholic Acid  
Taurocholoate (SeHCAT) Retention Test



SeHCAT



## Test procedure

- Uncollimated gamma camera
- 5 minute AP, PA views and background



Normal retention at day 7 :  $\geq 15\%$

Gift from Dr M Smith