

Lab 6

Microbial Physiology

Detergents

- Detergents like soaps are oily surfactant substances have cleaning properties in dilute solutions usually used for hand washing or prevent the spread of microorganisms.

The purpose of using disinfectants and detergents:

- 1- Highly effective against variety of microorganisms at low concentrations.
- 2- Non- toxic for animals.
- 3- Non-harmful and non-staining to materials.
- 4- Stable even in storage.
- 5- Not expensive.
- 6- A good surface tension reducer.

- The detergents are bipolar consist of two parts:

1- Lipophilic portion

The liquid soluble uncharged part consist of long hydrocarbon chains, the effectiveness of them depends on: 1- the length of the chain 2- the unsaturated state of these chains.

2- Hydrophilic portion

The water soluble charged part, the charge may be positive (+) or negative (-).

Mechanism of detergents action

When the detergent is dissolved in liquid solution, the lipophilic part of the detergent will react with the microbial lipids or with lipid droplets in dirt, while the hydrophilic part will lay away from the microbe cell.

- ❖ The cell membrane of microbial cell will rupture as a result from the union of the lipophilic part of the detergent with the lipid part of microbial cell and this leads to contact of the detergent with cell proteins causing **denaturation** and killing.
- ❖ Detergents are called **Bubbles sudsing agent**.