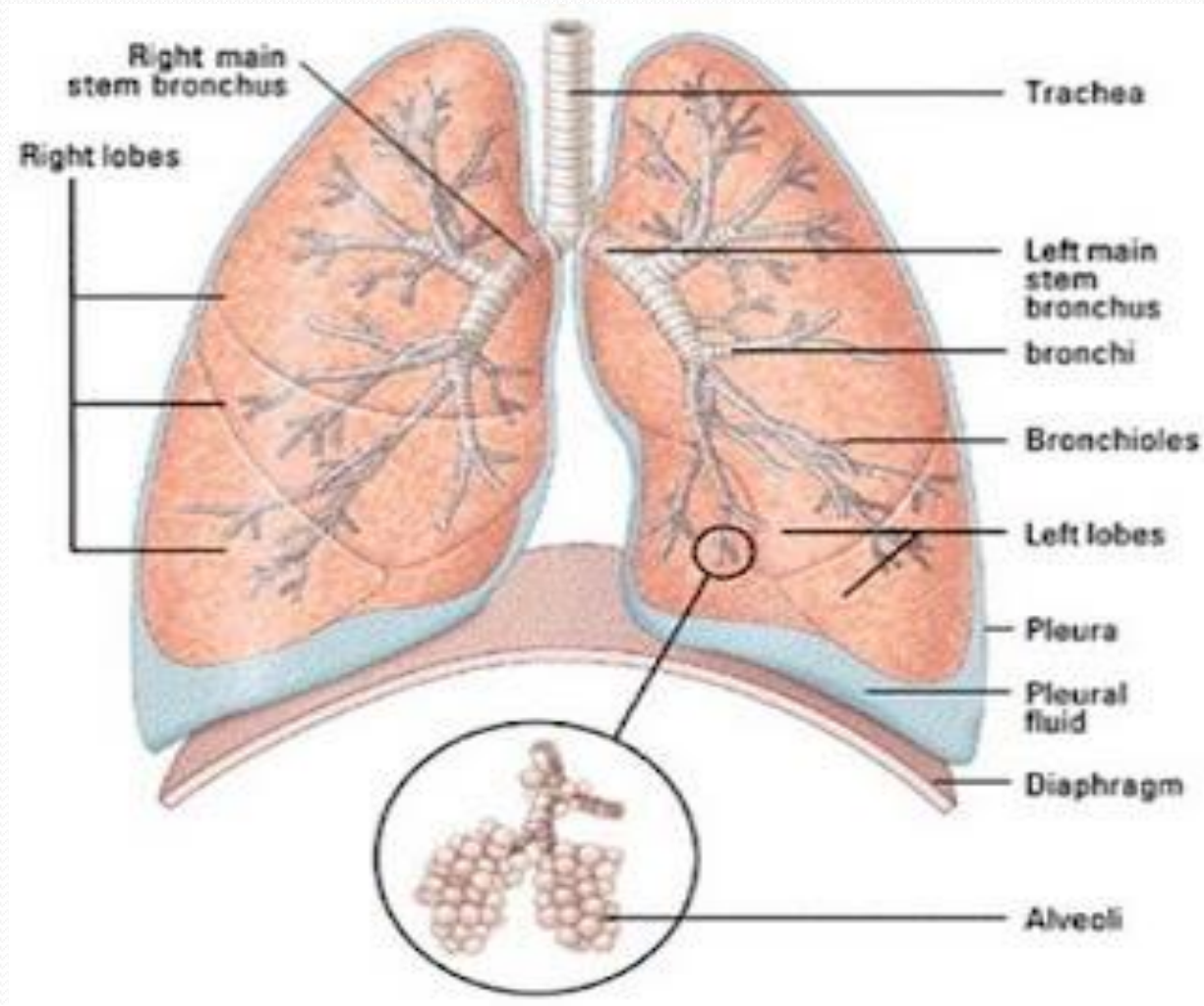




Sputum

Lungs



Sputum

- Sputum is a mucous substance produced by surface epithelial cells and sub mucous glands in the lungs and the bronchi.
- It is coughed up from the lower airways.
- Normally it is colorless and odorless .
- Mucous layer covers the airways and protects bronchial epithelium against inhaled noxious substances.
- Mucous is transported by the respiratory cilia towards the pharynx, which coughed up if its quantity is increased.

- Sputum production is increased by injury of the bronchial tree or lung parenchyma, caused by inhaled noxious substances or by inflammation (asthma ,bronchitis, pneumonia)

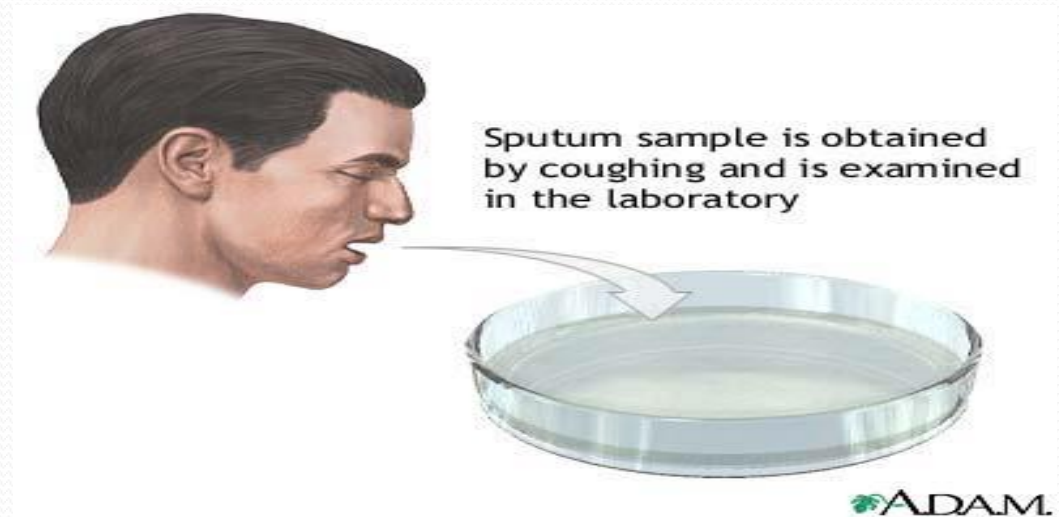
Chemical composition

- 95% water
- 5 % organic components:
- Carbohydrates (such as sialic acid which contribute to its high viscosity)
- Proteins (enzymes, immunoglobulin's), glycoprotein's which also contributes to the viscoelastic property of sputum.
- Lipids
- DNA
- Macrophages
- Bronchial epithelial cells

Abnormal Sputum

- Yellow to green sputum (pus, infection such as pneumonia).
- Blood in sputum (**hemoptysis**) lung cancer, tuberculosis, lung abscess and hemorrhage .
- Rust color is due to decomposed Hemoglobin.
- Very thick (viscose) sputum is a characteristic of cystic fibrosis .

Sputum collection



- 1- Coughing deeply and spit any sputum in a sterile cup.
- 2- The sputum is then taken to the laboratory.
- 3- It is placed in a special substance (medium) under conditions that allow the organisms to grow

Sputum test (Culture)

A sputum culture is done to:

- Detect and identify bacteria that is causing an infection (such as pneumonia or tuberculosis) of the lungs or the airways leading to the lungs.
- Symptoms of a lung infection may include difficulty breathing, pain when breathing, or a cough that produces bloody or greenish brown sputum.
- Identify the best antibiotic to treat the infection (sensitivity testing).
- Monitor treatment of an infection.

Pneumonia

- Lungs (one or both) infected (bacteria, fungi, amoebae, parasites or a virus) and inflamed.
- Symptoms (Fever - Chest pain and/or muscle pain - Cough that may produce white, yellow, or green mucus sputum).
- Bacterial pneumonia is treated with antibiotics.
- Viral pneumonia is not treated with antibiotics but with rest, fluids, and time.

Asthma

- Chronic lung condition that is characterized by a difficulty in breathing.
- Exposure to (pollen and dust) can lead to the development of asthma.
- Symptoms of Asthma
 - Shortness of breath
 - Wheezing (a whistling noise in the chest)
 - Cough and chest tightness.