

جامعة الانبار

كلية : الصيدلة

قسم : فرع العلوم المختبرية السريرية

اسم المادة باللغة العربية: الكيمياء الحياتية

اسم المادة باللغة الإنكليزية: Biochemistry I

المرحلة: الثالثة

التدريسي: المدرس المساعد زهير عبدالستار احمد

عنوان المحاضرة باللغة العربية: تفاعل النايتروبروسيد , تفاعل روزنهايم

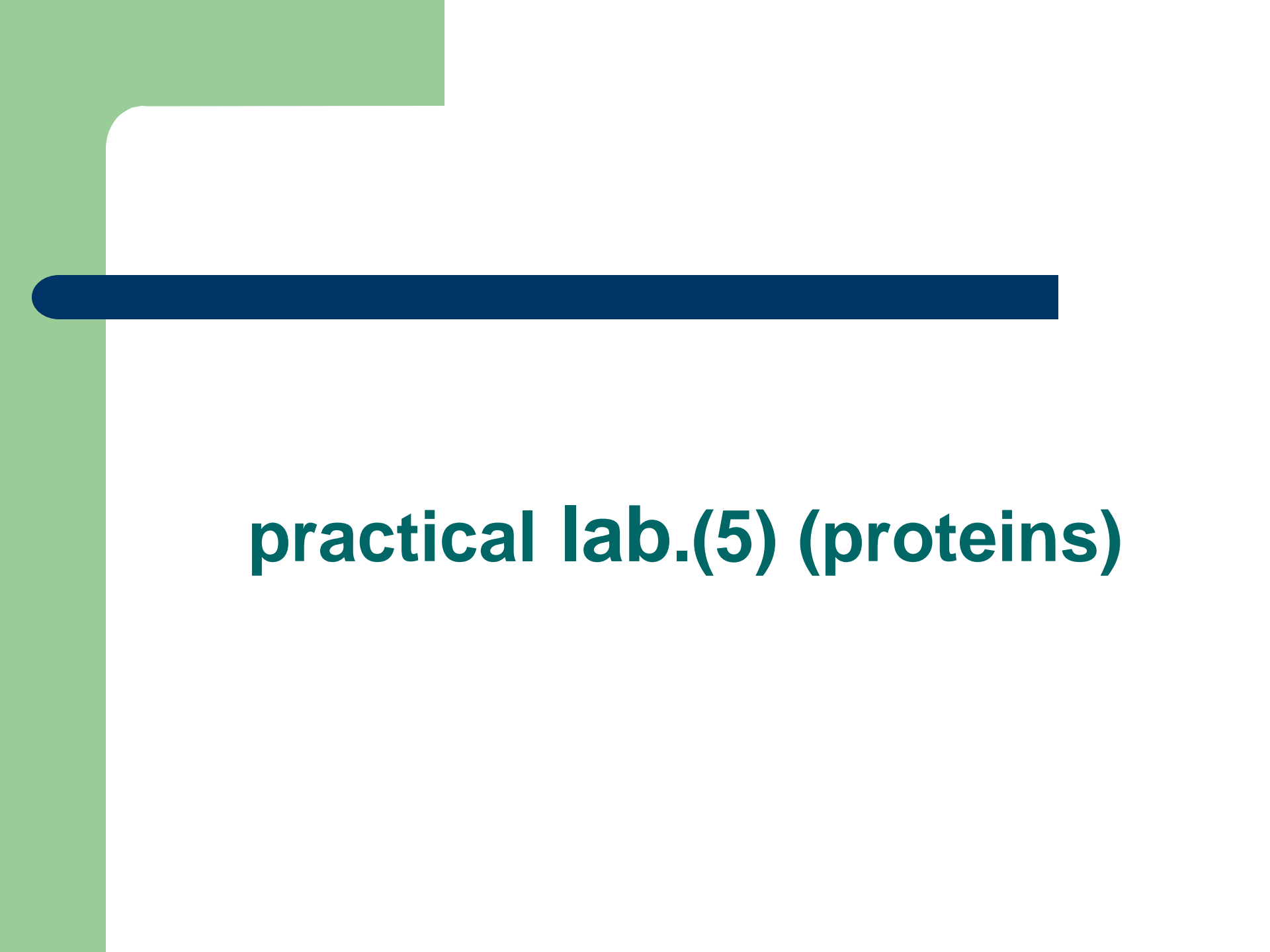
عنوان المحاضرة باللغة الإنكليزية: Nitroprusside reaction,

Rosenheim reaction



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# **practical lab.(5) (proteins)**



# Experiments

## 4- Nitroprusside reaction:

This test is for **amino acids** that contain a free **group of thiols (-SH)** as those found in the amino acid **cysteine**.

### Principle:

The test is based on the detection of free **sulfur atoms** in an alkaline solution due to the decomposition of the SH-group. The sulfur then reacts with the nitroprusside ion to form a **Deep pink complex**.



# Experiments

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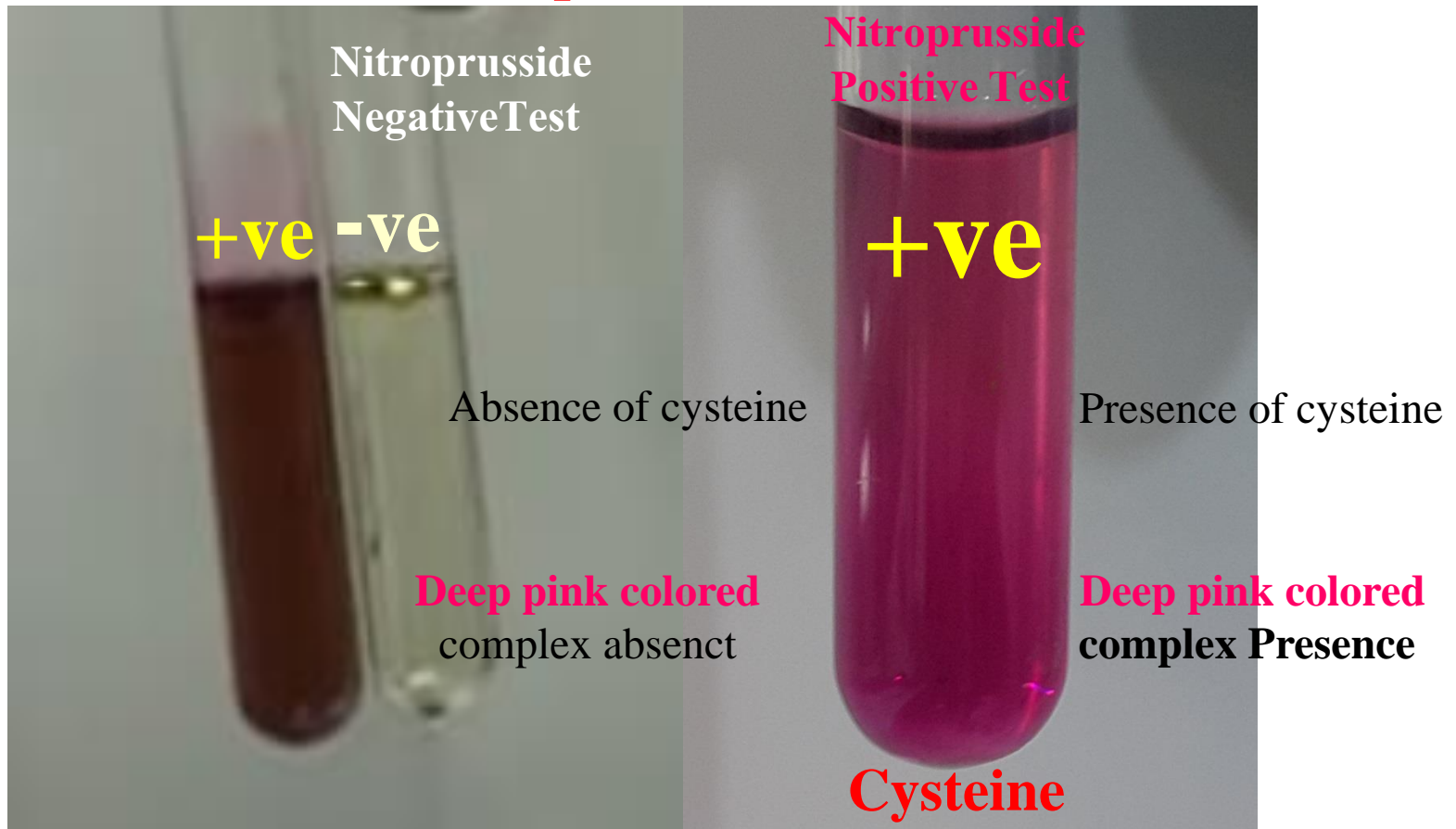
## Nitroprusside reaction:

### Procedure:-

- put 2 ml of a **Cysteine amino acid** into a test tube + 5 drops of **sodium nitroprusside solution** and mix well.
- Add 2 ml of ammonium hydroxide solution(**NH<sub>4</sub>OH**).
- The appearance of a **Deep pink complex** indicates the presence of a thiol group.

# Experiments

## Nitroprusside reaction





# Experiments

## 5- Rosenheim reaction:

this test is specific for **indole group** the only **amino acid** which containing **indole group** is **tryptophan**, so this test is specific for **tryptophan**.

### Principle:

The indole rings of **tryptophan** react with formaldehyde in the presence of strong acid (rosenheim reagent) to form **Red-violet compounds** named **carboline**.



# Experiments

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## Rosenheim reaction:

The rosenheim reagent only react with protein that contain **tryptophan**, the protein is hydrolysed by concentrated **sulphuric acid(H<sub>2</sub>SO<sub>4</sub>)** and the **tryptophan** to be free, so it react with formaldehyde to form **Red- violet compound**.

Protein + H<sub>2</sub>SO<sub>4</sub>\_\_\_\_\_ **tryptophan** + other A.A

Tryptophan +    Formaldehyde H<sub>2</sub>SO<sub>4</sub>    **Red-Violet product**





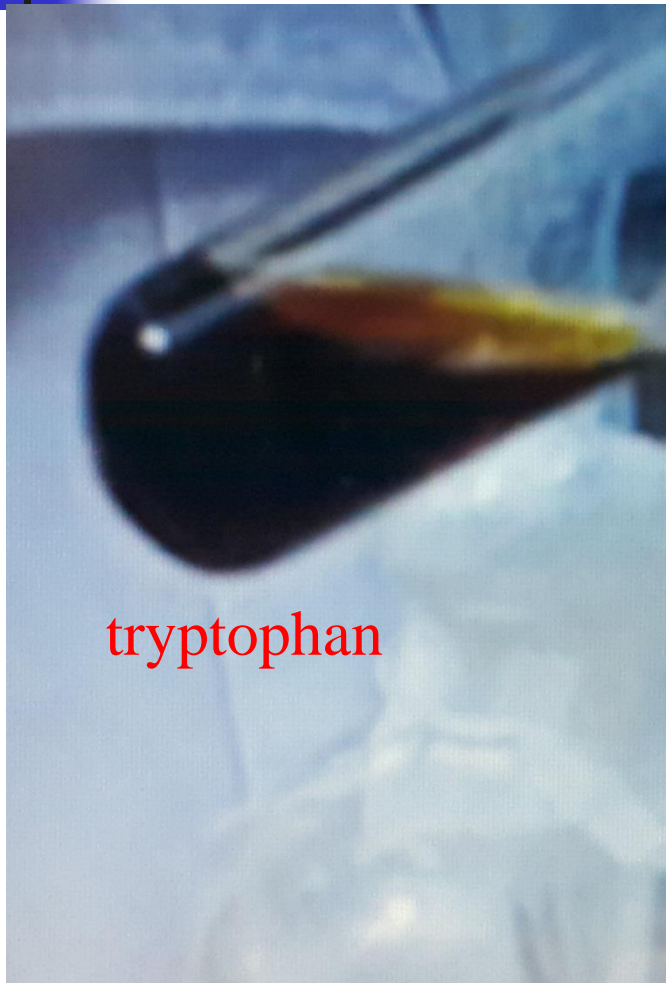
## Rosenheim reaction:

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### **Method:**

- Add 2ml of the **test solution(tryptophan)** to a clean test tube.
- Add 10 drop of **FeCl<sub>3</sub>** shaking more quickly and add 10 drops of **formaldehyde**.
- Mix well.
- Add 2ml of Concentrated **H<sub>2</sub>SO<sub>4</sub>** drop by drop to produce **Red to violet colour**.

## Rosenheim reaction



tryptophan



Violet ring present  
tryptophan



## Rosenheim Test

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**Negative  
Acree-Rosenheim  
Test**

**Tryptophan Absent**

**No Purple ring  
present**



**Positive  
Acree-Rosenheim  
Test**

**Tryptophan Present**

**Purple ring  
present**



thank you for  
listening