**PRACTICAL (2) …SECOND TERM……2024…….SE4COND STAGE**

**Benedict's reagent** (often called **Benedict's qualitative solution** or **Benedict's solution**) is a chemical [reagent](https://en.wikipedia.org/wiki/Reagent) and complex mixture of [sodium carbonate](https://en.wikipedia.org/wiki/Sodium_carbonate), [sodium citrate](https://en.wikipedia.org/wiki/Sodium_citrate), and [copper(II) sulfate](https://en.wikipedia.org/wiki/Copper(II)_sulfate) pentahydrate.[[1]](https://en.wikipedia.org/wiki/Benedict%27s_reagent#cite_note-1) It is often used in place of [Fehling's solution](https://en.wikipedia.org/wiki/Fehling%27s_solution) to detect the presence of [reducing sugars](https://en.wikipedia.org/wiki/Reducing_sugar). The presence of other reducing substances also gives a positive result.[[2]](https://en.wikipedia.org/wiki/Benedict%27s_reagent#cite_note-Collins-2) Such tests that use this reagent are called the **Benedict's tests**. A positive test with Benedict's reagent is shown by a color change from clear blue to brick-red with a precipitate.

Generally, Benedict's test detects the presence of [aldehydes](https://en.wikipedia.org/wiki/Aldehyde), [alpha-hydroxy-ketones](https://en.wikipedia.org/wiki/Acyloin), and [hemiacetals](https://en.wikipedia.org/wiki/Hemiacetal), including those that occur in certain [ketoses](https://en.wikipedia.org/wiki/Ketose). Thus, although the ketose [fructose](https://en.wikipedia.org/wiki/Fructose) is not strictly a reducing sugar, it is an alpha-hydroxy-ketone and gives a positive test because the base in the reagent converts it into the [aldoses](https://en.wikipedia.org/wiki/Aldose) [glucose](https://en.wikipedia.org/wiki/Glucose) and [mannose](https://en.wikipedia.org/wiki/Mannose). Oxidation of the reducing sugar by the cupric (Cu2+) complex of the reagent produces a cuprous (Cu+), which [precipitates](https://en.wikipedia.org/wiki/Precipitate) as insoluble

**Barfoed’s Test Definition**

Barfoed’s test is a chemical test used to detect the presence of monosaccharides which detects reducing monosaccharides in the presence of disaccharides. This reaction can be used for disaccharides, but the reaction would be very slow.

**Objectives of Barfoed’s Test**

* To detect reducing [carbohydrates](https://microbenotes.com/carbohydrates/).
* To distinguish reducing monosaccharides from disaccharides.

**What is the Ninhydrin Test?**

The ninhydrin test is a chemical test which is used to check whether a given analyte contains amines or α-amino acids. In this test, ninhydrin (a chemical compound with the formula C9H6O4; IUPAC name: 2,2-dihydroxyindane-1,3-dione) is added to a test solution of the analyte. The development of a deep blue colour indicates the presence of [ammonia](https://byjus.com/chemistry/ammonia/), primary/secondary amines, or amino acids in the analyte.

**Ninhydrin Test Result Interpretation**

* For ammonia, [primary/secondary amines](https://byjus.com/chemistry/amines-identification/), and amino acids, deep purple colour is obtained.
* For hydroxyproline and proline, a yellow colour is obtained.
* For asparagine, brown colour is obtained.
* If no colour change is observed, the analyte does not contain amino acids, amines, or ammonia.

**Which colour is developed in ninhydrin test?**

The reaction of ninhydrin with an amino acid results in the creation of Ruhemann’s purple, a dark purple compound.