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Osazone test principle

Osazone test procedure. What is the purpose of osazone test. Osazone test is also known as. Osazone test positive result. What is osazone test. Osazone test principle involved. State the principle of osazone test.

Osazone test detects reducing sugars in a given sample by forming specific complexes, allowing differentiation between various types of reducing sugars. The Phenyl Hydrazine test is another term for this biochemical assay, utilizing phenyl hydrazine as the reagent with an acetate buffer. This reaction involves oxidation condensation and yields 1,2-diphenylhydrazone, or osazone, which forms crystalline compounds with distinct shapes and characteristics. Osazone test is used to differentiate reducing sugars based on crystal formation. It's performed by reacting the sugar with a phenylhydrazine mixture, which results in the formation of osazones. The time and shape of these crystals vary for each reducing sugar, allowing for identification. Glucose and fructose form needle-shaped osazones, while galactose and lactose produce fluffy ball-shaped crystals. Maltose forms sunflower-shaped osazones. Sucrose does not react with phenylhydrazine to form crystalline compounds. This test is useful in detecting reducing sugars and differentiating them from non-reducing sugars like sucrose. Fact that carbohydrates with free or potentially free carbonyl groups react with phenylhydrazine to form osazone, a condensation-oxidation-condensation reaction yielding 1,2-diphenylhydrazone. The reaction between three phenylhydrazine molecules and carbon one and two of aldoses and ketoses produces the characteristic yellow-colored crystals of osazone. Different sugars yield distinct osazones, with C-2 epimers producing the same compound. The test requires 0.5g phenylhydrazine hydrochloride, 0.1g sodium acetate, glacial acetic acid, and a microscope. The procedure involves mixing 5ml of test solution with 0.3g osazone mixture and five drops glacial acetic acid in a clean test tube, warming it if necessary to dissolve the components, then observing crystal formation at various time points under low magnification with a microscope. The resulting crystals' shape and structure indicate the sugar type. The table below identifies different sugars based on their crystalline structures and times of appearance: Fructose (2min), needle-shaped; glucose (5min), needle-shaped; galactose (20min), thorny ball-shaped; maltose (30-45min), sunflower/star-shaped; lactose (30-45min), cotton ball/powder puff-shaped. The osazone test is the only method to distinguish lactose from maltose and can be used in clinical practice for sugar identification and differentiation. However, it may not work well with mixed-sugar samples or require large sugar quantities. Osazone test, also known as osazone test, is a chemical test used to detect the presence of reducing sugars in a sample.