

FRI-LCR-1-BFT(R)-01

QUANTITATIVE BENEDICT TEST FOR REDUCING SUGAR AND MILK ANALYSES

Radina Ivanova, young scientist

Microbiology laboratory

Multidisciplinary Hospital for Active Treatment “Heart and Brain”, Burgas, Bulgaria

E-mail: radinaivanova1997@abv.bg

Asst. Prof. Zlatina Chengolova, PhD

Department of Biotechnology,

Burgas State University “Prof Dr Assen Zlatarov”,

E-mail: zlatina-chengolova@uniburgas.bg

Abstract: Benedict method for reducing sugars offers rapid semi-quantitative analysis without dangerous materials. The method is mainly used for determining glucose in urine in cases of suspected diabetes or in other samples. It provides information about the concentration of reducing sugars presented in possible ranges of values. This study optimized the method to become quantitative with numerical values for the color of each test sample. The detection was made without any expensive equipment. A free available mobile phone app was used for color parameter determination. The lactose concentrations from 0 to 2.5% were determined in standard solutions and also in milk. Linear trendlines and R^2 were presentend. The Benedict test was used with other sugars – galactose, glucose and fructose, that had positive reaction with Benedict reagent, and sucrose and starch that had negative reaction with the reagent. The obtained results are discussed. The proposed method for conversion of semi-quantitative method to quantitative method could be applied for lactose determination on field and also could be adapted for other analytes.

Keywords: quantitative method, reducing sugars, saccharide test, milk lactose determination, Benedict test.

The paper is awarded with "Best Paper" Crystal Prize-64th Science Conference of Ruse University, Bulgaria, 2025, ISBN 978-954-712-753-1