



Estimation of Glucose from fresh fruits

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Abstract

They are nutrient dense, providing dietary fibre, vitamins, minerals and phytonutrients. Dietary Guidelines recommend we eat plenty of enjoy fruit, with research showing this can protect against weight gain, obesity, heart disease, stroke and some cancers. Data, however, shows that many of us are not eating enough fruits and vegetables according to recommendations. Some fruit are higher in sugars than others, but it's important to look at the food as a whole - fruit contribute important nutrients for health like dietary fibre, vitamins and minerals. Fruit juice-based products are potentially high demanded products in India. The research was conducted to estimate the total sugar content in commercially available fruit juice products and to compare the suitability and efficiency of analytical methods.

Key words- Different types of fruit, SD Fine Chem, GOD-POD method.

Introduction

Glucose occurs naturally in fruits and plant juices and is the primary product of photosynthesis. Starch is converted into glucose during digestion, and glucose is the form of sugar that is transported around the bodies of animals in the bloodstream. Although in principle there are two enantiomers of glucose (mirror images one of the other), naturally occurring glucose is D-glucose. This is also called dextrose, or grape sugar because drying grape juice produces crystals of dextrose that can be sieved from the other components. Glucose syrup is a liquid form of glucose that is widely used in the manufacture of foodstuffs. It can be manufactured from starch by enzymatic hydrolysis. For example, corn syrup, which is produced commercially by breaking down maize starch, is one common source of purified dextrose. However, dextrose is naturally present in many unprocessed, whole foods, including honey and fruits such as grapes.

Experimental Method

Fruits Materials

All types of fruit were collected from the local market in pimpalgaon kale, in February 2022 and authenticated by Instructor, Study of fruit material and collection, pimpalgaon kale.

Chemicals

Dibasic sodium hydrogen phosphate, sodium bicarbonate, magnesium chloride, calcium chloride, potassium chloride, sodium chloride and SD Fine Chem. All chemicals and solvents used were of analytical grade.

Fruits Extract

The collected fruits were shade become dry, coarsely powdered and extracted with hot water by maceration process. The extract was filtered and concentrated in vacuum and kept in a vacuum desiccator for complete removal of solvent. Hot water extract of fruits was obtained with a yield of 1.9%.

Glucose uptake assay

The supernatant was collected for glucose estimation and glucose uptake was terminated by washing the cells twice with 1 ml ice-cold with buffer solution. Cells were subsequently recovery by freezing and liquefying twice. Solution was collected for glucose estimation.

Glucose uptake was calculated as the difference between the initial and final glucose content in the incubated medium by GOD-POD method as follows:

Mix 10 μ l of sample and 1 ml of reagent, incubate for 30 min at 24-29°C or 15 min at 36°C. Measure the absorbance of the standard (Standard) and the sample (sample) against the reagent blank within 90 min, the time interval from sample addition to read time must be exactly the same for standard/control and sample.

Glucose concentration $\text{mmol/l} = \frac{\text{Asample}}{\text{Astandard}} \times 46.4 \text{ mg/dl} = \frac{\text{sample}}{\text{standard}} \times 100$

Results & Discussion

Glucose uptake was calculated as the difference between the initial and final glucose content in the incubated medium by GOD-POD method. The given results show that hot water extract of fruit enhance the glucose uptake by 20.05 % over control at 100 μ g/ml dose. Results were compared with sessional fruits, which were used as the standard solution. (100 μ g/ml) enhance the glucose uptake by 117.76 % and 41.42% over control. Extract was also tested and confirm any mutually beneficial effect, but results indicate that extract does not mutually beneficial effect with sessional fruits. Extract of fruits enhance the glucose uptake in by 117.76 % over control when used in combination.

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