

Item 1.

John's friend expressed doubts about the health benefits of food sample B.

Task.

Conduct experiments to analyse the nutrient content and potential health benefits of food sample B. Evaluate its nutritional composition, based on your findings, provide recommendations to John regarding suitability of including sample B in his diet.

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EXPERIMENT TO DETERMINE FOOD NUTRIENTS IN FOOD SAMPLE B.

Aim: To determine the food nutrients present in food sample B.

Hypothesis: food sample B contains all food nutrients.

Requirements.

Food sample B ✓ 1d

Test tubes ✓ 1d

Test tube racks ✓ 1d

Hydrochloric acid (dilute) ✓ 1d

Benedict's solution ✓ 1d

Iodine solution ✓ 1d

Sodium hydroxide solution ✓ 1d

Heat source ✓ 1d

Test tube holders ✓ 1d

Copper (II) sulphate solution ✓ 1d

DCPIP solution (Dichlorophenol Indophenol) ✓ 1d

Procedure	Observation	Deduction
To 1 cm ³ of food solution, add 2 cm ³ of Benedict's solution and boil.	The turbid solution turned to a blue solution and remained blue on boiling	Reducing sugars absent
To 1 cm ³ of food solution, add 2 drops of iodine solution	The turbid solution turned to a black solution	Starch present
To 1 cm ³ of food sample B solution, add 1 cm ³ of hydrochloric acid and boil. Cool the	The turbid solution turned to a blue solution, green solution, yellow solution and finally orange precipitate.	Non reducing sugars present

solution under water Add 1 cm ³ of sodium hydroxide and then 2 cm ³ of Benedict's solution and boil.		
To 1 cm ³ of food solution in a test tube, add 1 cm ³ of sodium hydroxide then follow by 2 drops of copper (II) sulphate and shake	The turbid solution turned to blue solution and the blue colour persisted	Proteins absent
To 1 cm ³ of DCPIP solution in a test tube, add food solution drop wise.	The turbid blue solution turned to a pale blue solution	Vitamin C absent
To 1 cm ³ of food solution in a test tube, add 2 x 1 cm ³ of ethanol then followed by 2 drops of water	The turbid solution formed turbid emulsification omitted	Lipids

142

106

039

Recommendations.

Since food sample B does not contain reducing sugars, proteins and vitamin C, the hypothesis is wrong but the food nutrients present are non reducing sugars and starch.

Starch is broken down to form glucose which is hydrolysed in the body during respiration to provide energy in the body.

John is likely to suffer from kwashiorkor because he lacks proteins in his meals yet they are body building and repair worn out body tissues.

I recommend John to include proteins in his meals to prevent symptoms like pot belly, wasted muscles since he lacks body building amino acids and glycerols.

Other essential nutrients to be included are vitamin C and non reducing sugars.