**Testing for macronutrients in spring onions (*Allium cepa)***

**Background**

Carbohydrates (sugars and starch) can be detected by the use of an indicator. An indicator is a chemical that produces a characteristic colour when a particular substance is present.

State the positive test for:

1. glucose

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1. starch

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1. proteins

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**Research Question**

Where are nutrients found in a spring onion? Identify nutrients found in different parts of the spring onion.

**Equipment**

Each pair of students is provided with the following chemicals and apparatus;

|  |  |
| --- | --- |
| * spring onion * scalpel * 4x test tubes * test tube rack * 2x plastic pipettes * binocular microscope | * bunsen burner * matches * Iodine Solution * Benedict”s Solution * Biuret’s Solution * mortar and pestle |

**Safety**

A summary of safety notes on how to safely and respectfully use the equipment and chemicals.

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This lab must be completed and cleaned up within 45 minutes. Explain how this was done.

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**Method**

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| 1. **Longitudinal section of the *Allium cepa***   Use sharp scalpel to carefully and neatly cut a longitudinal section to reveal the anatomy of the plant.  You may use the binocular microscope to make more detailed observations.  In Figure 1, draw, identify and label the following organs;   * roots, * stem, * leaf bases and * leaves. | **Figure 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

1. In a mortar and pestle grind the **green leaf** of the spring onion.
   1. Scrape one third of the paste into a test tube. Add two droppers full of Benedict's Solution.

GENTLY heat the mixture. Note any colour change.

* 1. Scrape one third of the paste into a test tube. Add one dropper full of Iodine Solution. Note any colour change.
  2. Scrape one third of the paste into a test tube. Add one dropper full of Biuret’s Solution. Note any colour change.

1. In a mortar and pestle grind the **white leaf bases** of the spring onion.

Repeat steps a. to c.

1. In a mortar and pestle grind the **white stems** of the spring onion.

Repeat steps a. to c.

1. In a mortar and pestle grind the **white roots** of the spring onion.

Repeat steps a. to c.

**Results**

**Table 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Plant part** | **Colour when heated with**  **Benedict’s** | **Colour in Iodine** | **Colour in Biuret’s** | **Macronutrients present** |
| green leaves |  |  |  |  |
| leaf bases |  |  |  |  |
| stems |  |  |  |  |
| roots |  |  |  |  |

**Analysis**

Design and draw an InfoGraphic to show the nutrients present in different the parts of a spring onion.  You may use the spare page, or design a digital InfoGraphic.

**Conclusion**

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**Assessment Task 1** will involve answering **Science Inquiry Skills** questions, under test conditions, about these two laboratory Sessions.