**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
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**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.