Learning activity 3

Heating of green vegetables

**Objective**

To examine the colour and texture changes of boiled green vegetables with different pH conditions.

**Principle**

Chlorophyll stability is affected by pH condition. Heating of vegetables will cause acid in cells to be released to the cooking medium. Chlorophyll will be converted to pheophytin. The colour changes from bright green to dull olive brown.

**Equipment & materials**

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| --- | --- |
| **Equipment** | **Materials** |
| Scale  Saucepan  Timer | Green vegetables 100 g x 3 (300g)   |  |  | | --- | --- | | Sample A: | Water 200ml | | Sample B: | Water 200ml  Baking soda ¼ tsp | | Sample C: | Water 200ml  Vinegar 1 Tbsp | |

**Procedure**

1. Prepare the three samples.
   1. 200ml water
   2. 200ml water + ¼ tsp baking soda
   3. 200ml water + 1 Tbsp vinegar
2. Bring the samples to the boil.
3. Add 100g vegetables to each sample and cook for another 4 minutes.
4. Record the colour and texture of cooked vegetables in different samples.

**Results**

|  |  |  |
| --- | --- | --- |
| **Cooking medium** | **Colour of cooked vegetables** | **Texture of cooked vegetables** |
| Water only |  |  |
| Water + baking soda |  |  |
| Water + vinegar |  |  |

**Questions**

1. Which cooking medium significantly changes the colour of green vegetables? Explain.
2. Which cooking medium can speed up the breakdown of cellulose and produce a softer texture?
3. What happens if cooking the vegetables in an alkaline medium for too long?