Sprout Inhibition in Fruits

Biology | Plant Physiology / Botany | Germination, growth, development

Difficulty level	Group size	Preparation time	Execution time
easy	1	10 minutes	40 minutes

This content can also be found online at:

http://localhost:1337/c/612ca042552ac900039f2016

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Teacher information

Application

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Apple slice

Most plant seeds never germinate in the fruit, even though the pulp often contains a lot of water. We know that seeds need air as well as water to germinate. Is the fruit so poorly supplied with air, or is there some other reason for this? Students should answer this question during the experiment.

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Other teacher information (1/2)

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Prior knowledge

The students should already know the process of germination and the necessary prerequisites for it from the lessons.

Scientific Principle

One of the plant hormones, abscisic acid (ABA), prevents seed germination in most plants. In addition, other inhibitors such as ethylene, essential oils or unspecified osmotically active substances may play a role. Tomatoes and apples also contain such inhibitors, although, as the experiment shows, to a lesser extent than oranges.

Other teacher information (2/2)

Learning objective

Students should realize that there must be substances in the fruit that prevent the seeds from germinating.

Tasks

Students should investigate the reasons why the seeds do not germinate already in the fruits.

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Safety instructions

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- The general instructions for safe experimentation in science lessons to be applied to to this experiment.

Student Information

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Student Information

Motivation

Apple slice

Most plant seeds never germinate in the fruit, even though the pulp often contains a lot of water. We know that seeds need air as well as water to germinate. Is the fruit so poorly supplied with air, or is there some other reason for this? Students should answer this question during the experiment.

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Equipment

Position	Material	Item No.	Quantity
1	Circular filter,d 90 mm,100 pcs	32977-03	1
2	Knife, stainless	33476-00	1
3	Tweezers,straight,pointed,120mm	64607-00	1
4	Petri dish, d 100 mm	64705-00	5

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Set-up

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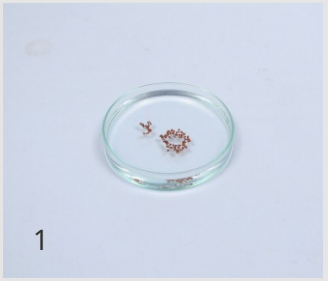
- Soak about 60 seeds of garden cress in a 100 mm diameter Petri dish filled with water for 10 minutes (Fig. 1).
- In the meantime, place three 90 mm diameter round filters in each of four 100 mm diameter Petri dishes, smooth them out on the bottom of the dishes and moisten them very well with water (Fig. 2).
- Cut an approximately 5 mm thick slice from the apple with a knife (Fig. 3) and place it on one of the prepared Petri dishes (Fig. 4). Do the same with the tomato and the orange.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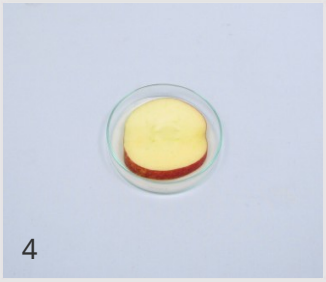
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Procedure

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- Place 10 - 15 of the swollen cress seeds on each disc (Fig. 1) and on the moist round filters (Fig. 2) in the fourth tray.
- Place the lids on the trays at an angle and observe the development of the cress seeds over the next two days.

1

2

Report

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Task 1

Drag the words to the right place.

One of the _____, abscisic acid (ABA), _____ seed germination in most plants. In addition, other _____ such as ethylene, essential oils, or unspecified osmotically active substances may play a role. Tomatoes and apples also contain such inhibitors, although, as the experiment shows, to a _____ extent than oranges.

plant hormones

prevents

inhibitors

lesser

Check

Task 2

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Choose the correct statements.

- [ ] The best germinated seeds are those that were not in any fruit.
- [ ] The germination order (starting with the best) was: petri dish; tomato/apple; orange.
- [ ] The seeds are best germinated in the orange.
- [ ] The germination order (starting with the best) was: orange, tomato/apple; petri dish.

Check

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Task 3

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Choose the correct statements.

- [ ] Birds eat the fruits and thus contribute to seed dispersal by shedding the seeds elsewhere.
- [ ] Inhibition of germination is favorable for the spread of plants. Thus, new plants sprout at some distance from the mother plant.
- [ ] Birds eat the fruits and thus also digest the seeds. These seeds no longer germinate and are lost for the reproduction of the plant.

Check

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