

Martian habitats in the classroom: testing *Artemia*

Activity 1 worksheet: Casting for the colonisation of Mars

Materials

- *Artemia salina* (50 cysts per beaker/250 cysts per group)
- Aged/dechlorinated tap water
- Sea salt or non-iodized coarse salt
- Marker
- 9 Beakers
- Lamp (optional, to simulate sunlight)
- Balance
- Toothpick

Procedure (for each student group)

1. Prepare four salt solutions using dechlorinated tap water and table salt. Dissolve the sea salt in separate beakers containing dechlorinated tap water to obtain salinities of 15, 30, 45 and 60 g/l (1.5, 3, 4.5 and 6%). The salt solutions may be prepared in advance and clearly labelled.
2. Prepare five small beakers and label each one in advance with the salinity to be tested and the student group. Add 50 ml of dechlorinated tap water to the control jar labelled 0 g/l, and 50 ml of the corresponding salt solution to each of the other jars.
3. Add 50 *Artemia* cysts to each container. For accurate cyst counting and transfer, use a moistened toothpick to gently pick up the cysts and place them into the labelled beakers.
4. Gently swirl the containers, then place them in a warm environment at 28°C. If only lower temperatures are available, the setup can still be used, but hatching will take longer. If available, provide continuous light to encourage hatching.
5. Record the number of hatched *Artemia nauplii* after 24 h and 48 h using a hand lens or stereomicroscope.
6. Compare the hatching success between the different salinity conditions.
7. Record and discuss the results.

Discussion

- How 'Martian' is this experiment?
- How do experimental variables affect the results?
- Which 'Martian habitat' worked best?
- Did *Artemia* hatch in freshwater?
- Compare the number of hatched *Artemia nauplii* after 24 h and 48 h. How can any difference between the two counts be explained?
- How could the experiment be improved to increase the reliability of the results?
- What would *Artemia* need, beyond hatching, to successfully colonise a habitat?
- Why use cysts rather than adult *Artemia*?
- Should we take life to other planets?