

Juice “Extraction” from Slices of Salted Radish

—“Radish’s tears”—

Equipment:

wire or meat skewer (preferably stainless steel, diameter: 1 mm, length: 200 mm)
50 mL-measuring cylinder
funnel
support stand, clamp holder
salt shaker
cutting board or plate

“Chemicals”:

white radish
table salt (NaCl)

Procedure:

Preparation: The white radish is marked on the outside with a longitudinal line with a permanent felt marker (so that the slices can be stacked correctly later on). The radish is cut into slices having a thickness of approx. 2 mm. The slices are piled in the original order in two stacks with a height of approx. 5 cm each and placed on a plate.

Procedure: The slices of one of the stacks are picked up in turn and salted very well with the shaker so that the salt grains form a relatively dense layer. Subsequently, the slices are piled on top of each other in the former sequence. Both stacks are speared on the skewer and the skewer is attached to the support stand. The measuring cylinder together with the funnel is put under the salted slices.

Observation:

Immediately, juice begins to drip out of the stack with the salted slices. The measuring cylinder contains approx. 20 to 30 mL juice after 10 to 15 minutes.

Explanation:

The solvent water migrates from the more diluted solution within the cells of the radish through the semipermeable cell membrane into the concentrated, therefore water-poor, salt solution on the outside. The process is explained in terms of the chemical potential of the solvent which is lower in the more concentrated solution because of the lower concentration of solvent in this solution.

Disposal:

The radish can be disposed of with the regular household garbage.

