

# [Christine otieno](https://assignbuster.com/christine-otieno/)

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Christine Otieno Estimating Osmolarity of plant Cells(potato and celery)by percentage change in weight Using different sucrose concentrations Introduction The purpose of this experiment was to estimate Osmolality of plants cells i. e. Potato and celery by converting the observed change of weight in different sucrose concentrations. The hypothesis assumes that the solute concentration of the plant samples would be indirectly proportional to the weight; there would be decrease in weight as the concentration increases. The independent variable in this experiment would be the change in weight while the independent variable would be the concentration of sucrose. The control group used is the weight of both potato and celery before emersion into the sucrose solution. The constant control variables were the potato and celery. Materials (Entire lab class) \* Large potato tuber, 3 celery stalks \* 24 test tubes(4 tubes per group of four students) \* 6 petri dish(1 dish per group) \* Wax marking pencils, paper towels \* Forceps, balance, Aluminium foil, razer blade, knives \* 100mls sucrose solutions: 0. 1, 0. 2, 0. 3, 0. 4, 0. 5, 0. 6, molar solutions. one bottle for each group. \* De-ionised water. \* Calculator Method: The effects of one concentration of sucrose were tested by each group. Each group was provided with. 2 potato and celery cubes, 4 test tubes, 1 bottle of sucrose solution, 1 petri dish and blade I. 10mls of sucrose was added to each essay tube II. Both potato and Celery tubes were put in a petri tube and covered to prevent drying. III. The pieces were then weighed and recorded in a table. IV. The potato and celery tube were then immersed in labeled test tubes and staring time recorded. V. The samples were incubated for 2hours and swirled every 20 minutes.(other activities were performed as we waited for results) VI. At the end of the incubation period time was recorded and calculated in as per the provided table. VII. The pieces were then removed from the solution, bloated and final weight recorded. VIII. Percentage weight change was calculated using the formula below Percent weight change (%) = final weight-initial weight \* 100 Initial weight Results After collecting Data from all the groups, It was observed that the weight of the reduced with increase in concentration of sucrose. This was calculated using the percentage weight formula and concentration in moles per mls while the weight was measured in grams. Time was also noted in hours and minutes. In dilute concentrations the celery looked turgid due to the hypotonic conditions they had more water in them. But as concentrations changed to hypertonic the samples shrunk because they had less water. Isotonic conditions were observed at a molarity of0. 32M in the celery and at 0. 36M in the potato. At 0M the potato and celery had percentage weight change of 17. 07% and 9. 93% respectively. The percentage in weight kept falling and rising inconsistently, At 0. 33M and 0. 5M both samples had almost the same percentage weight change. Group data for experiment: estimating osmolarity by change in weight Potato | | Initial weight (g) | Sucrose0M | Sucrose0. 1M | Sucrose 0. 2M | Sucrose0. 3M | Sucrose0. 4M | Sucrose0. 5M | Sucrose0. 6M | Final weight | 1. 23 | 1. 35 | 1. 28 | 1. 22 | 1. 69 | 1. 32 | 1. 36 | % change in weight | 1. 44 | 1. 41 | 1. 40 | 1. 41 | 1. 13 | 1. 23 | 1. 21 | | 17. 07 | 4. 44 | 9. 38 | 15. 57 | -2. 58 | -6. 82 | -11. 3 | Potato | | Initial weight (g) | Sucrose0M | Sucrose0. 1M | Sucrose0. 2M | Sucrose0. 3M | Sucrose0. 4M | Sucrose0. 5M | Sucrose0. 6M | Final weight | 1. 41 | 0. 22 | 1. 13 | 1. 09 | 1. 22 | 1. 17 | 1. 22 | % change in weight | 1. 55 | 1. 21 | 1. 21 | 1. 16 | 1. 19 | 1. 09 | 1. 13 | | 9. 93 | 0. 82 | 7. 18 | 6. 42 | -2. 46 | -6. 84 | -7. 38 |