

The Effect of Temperature on Respiration in Yeast Cells

Yeast cells were placed in an apparatus with a solution of sugar (a major nutrient for yeast). The apparatus detects bubbles of gas released by the yeast cells. The rate of bubble production by the cells was measured and recorded in Table 1.

Table 1: Bubbles produced by yeast cells at various temperatures

Temperature (°C)	0	10	20	30	40	50	60	70
Number of bubbles of gas produced per minute	0	3	7	12	7	4	1	0

1. [SP 6] Identify the source of the bubbles.
2. [SP 6] Describe why the rate of bubble formation can be used as an indication of the rate of respiration by the yeast cells.
3. [SP 4, SP 5] Graph the results to determine the optimum temperature for respiration in yeast.
4. [SP 6] Respiration is a series of enzyme-catalyzed reactions. Provide an explanation for the observed relationship between the rate of respiration and the temperature.
5. [SP 3] Design an experiment to investigate the effect of changing the pH of the sugar solution on the respiration rate. Predict the expected results.