

Growth of bacteria in solutions

[Science](#), [Biology](#)



Growth of Bacteria in Solutions of Different Concentration Lecturer Affiliation

Due A critical examination of bacteria growth in solutions of different concentrations will provide facts about the scientific findings. In hypotonic solution, water concentration is higher outside the cell with the solute concentration being higher inside the cell. In this case, water enters the cell. Isotonic solutions have water concentration outside the cell being equal to solute concentration inside the cell, therefore, water enters the cell and moves out at an equal rate. Lastly, in hypertonic solution, water concentration is greater inside the cell with solute concentration being higher outside the cell; water is drawn out.

According to Queck and Otto (2015), scientists have found out that the growth of *Staphylococcus epidermidis* is minimal in hypertonic solutions, moderate in isotonic solutions, and high in hypotonic solutions. On the other hand, *Saccharomyces cerevisiae* shows moderate growth in hypotonic solution, minimal growth in isotonic concentration, and scant growth in hypertonic solutions.

It was discovered that both *Staphylococcus epidermidis* and *Saccharomyces cerevisiae* experienced growth in concentrations of NaCl because they have adapted to the effects of NaCl in responses to changes occurring in osmotic pressure. However, it was noted that the bacterial growth reduced with increase in the concentration of the solution. The growth pattern of *Staphylococcus epidermidis* was observed to be slightly different from that of *Saccharomyces cerevisiae* in the various NaCl concentrations. In 1% NaCl solution, *Staphylococcus epidermis* showed high growth and the solution was cloudy. There was moderate growth on the growth of the bacteria in 7% NaCl

concentration, and no growth was observed at 15% NaCl. On the other hand, the growth pattern of *Saccharomyces cerevisiae* was observed to be as follows; moderate growth in 1% NaCl with the solution remaining cloudy all through, minimal growth in 7% NaCl and Scant growth in 15% NaCl (Marshall, C, 2015).

According to Levinson (2015), the scientific findings imply that the growth of both *Staphylococcus epidermidis* and *Saccharomyces cerevisiae* is favored by low concentrations of NaCl. At 1% NaCl, moderate and high growth rates were observed for *Saccharomyces cerevisiae* and *Staphylococcus epidermidis* respectively. Therefore, it means that even at hypotonic solutions, the growth rate of *Staphylococcus epidermidis* is faster than that of *Saccharomyces cerevisiae*. A similarity in growth behavior of the two bacteria was noted in 1% NaCl whereby both solutions turned cloudy. As the concentration of NaCl continued to increase, the growth of both bacteria decreased. According to Queck and Otto (2014), the growth of *Staphylococcus epidermidis* can be experienced in NaCl concentrations of up to 10% but no growth can be experienced in 15% NaCl. On the hand, *Saccharomyces cerevisiae* showed scant growth in 15% NaCl. This factor implies that *Saccharomyces* can withstand higher osmotic pressure than *Staphylococcus epidermidis*.

Conclusion

Scientific findings on the ability of bacteria to grow in solutions of different concentrations provide facts about the growth of *Staphylococcus epidermidis* and *Saccharomyces cerevisiae* in 1%, 7% and 15% NaCl. It was noted that growth of the two bacteria decreased as the NaCl concentration increased.

This findings support the argument that both *Staphylococcus epidermidis* and *Saccharomyces cerevisiae* thrive in low concentrations of NaCl. The study showed that it was only *Saccharomyces cerevisiae* able to survive in 15% NaCl while the growth of *Staphylococcus epidermidis* was limited to 10% NaCl.

References

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Marshall, C. (2015). *Microbiology*. Oxford: Blakistons Son & Company.

Queck, S. Y., and Otto, M. (2014). *Staphylococcus epidermidis and other Coagulase-Negative Staphylococci*. New York: Caister Academic Press.