

INTRODUCTION

The toothbrush is a useful tool for oral hygiene, its objective is to remove all microorganisms from the mouth, in order to prevent oral pathologies. *Streptococcus mutans* is considered one of the main hosts in the oral ecosystem, causing caries or other infections in the mouth. In this analysis, the sample used was 120 (divided into: 60 cultures before and after treatment), classified into 4 groups, each one of 15 brushes. The 60 samples that were seeded in the Petri dishes (before treatment) were submerged, subsequently the samples were introduced into acetic acid, each group in the corresponding concentration and they were seeded again in the Petri dishes (after treatment). They were incubated at $\pm 37^{\circ}\text{C}$, in anaerobiosis for 48 hours, resulting in disinfection for 20 minutes, the 15% acetic acid agent showed a higher level of disinfection in toothbrushes, its effectiveness was 98.90%, the acetic acid agent at 10%, proved to have an effectiveness of 95.0%, the acetic acid agent at 5%, presented a low degree of effectiveness compared to the other agents, the distilled water used as a control group, presented a very low effectiveness against disinfection leaving a contamination of 80%. In conclusion, *Streptococcus mutans* turned out to be sensitive in vitro to chemical substances such as acetic acid at different concentrations 5, 10 and 15%, however the microorganism presented greater sensitivity to the agent at a concentration of 15%.

OBJETIVE

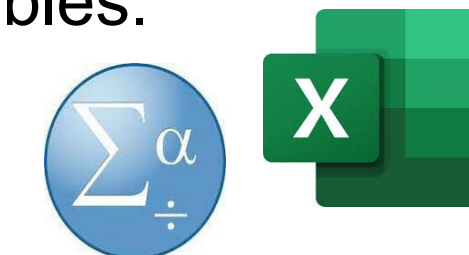
Analyze the antibacterial effectiveness of acetic acid as a chemical agent in the disinfection of toothbrushes inoculated with *Streptococcus mutans*.

METHODS & MATERIAL

In this analysis, the general sample used was 120 samples, being divided into (60 cultures before and 60 cultures after the treatment with the chemical agent acetic acid), therefore, 60 new Online Best Service Toothbrush® toothbrushes were purchased.

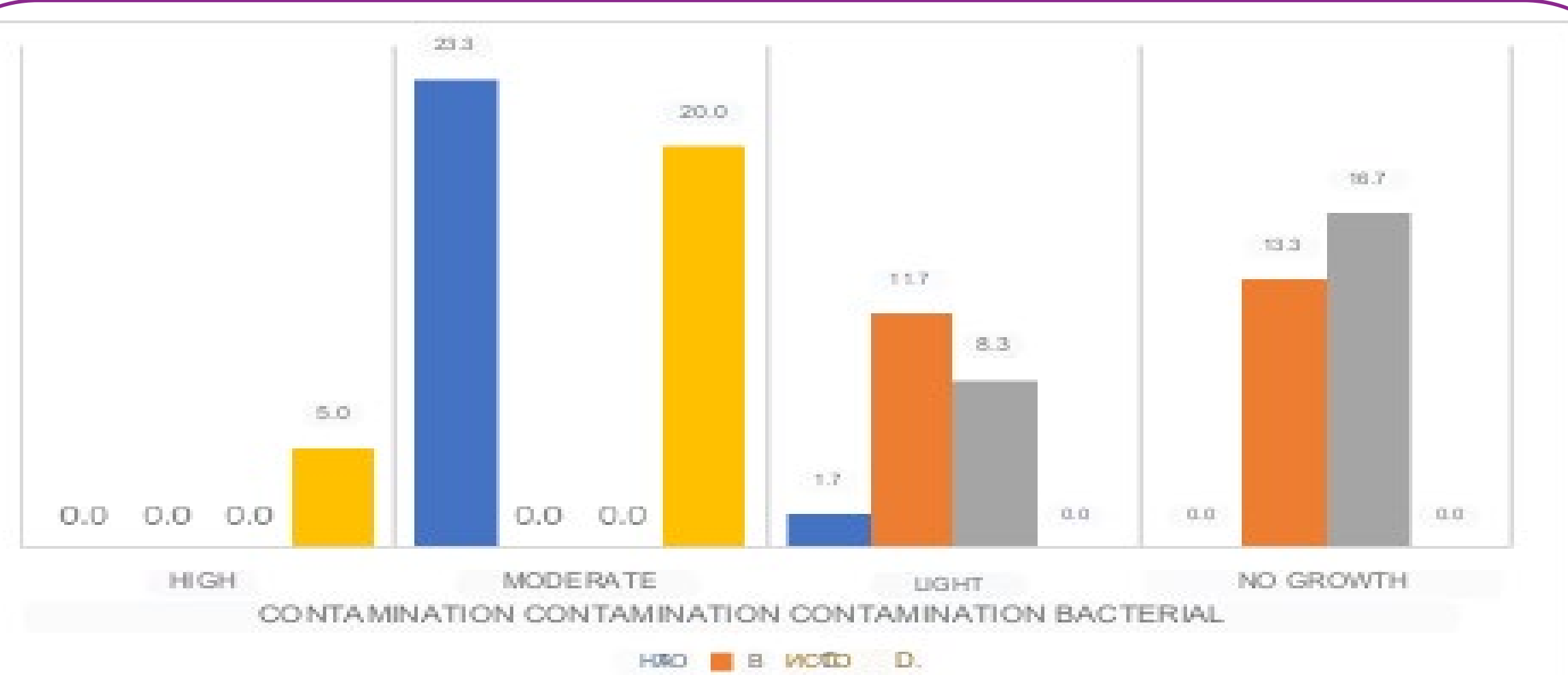
Which were sterilized and later contaminated with pure strains of *Streptococcus mutans* ATCC® 25175 and classified into four groups, each of 15 brushes. Each group was identified by letters of the alphabet from A to D (a, b, c, d.), which represented the concentration of the chemical agent, and a control group that corresponded to distilled water.

The data was assessed and evaluated with the help of Statistical Analysis programs SPSS® Statistics 25.0 and Microsoft® Excel® 2019 MSO, to be presented and managed in writing as a report using tables.



RESULTS

The contamination present in each group after the chemical treatment was observed in percentage levels. This graph was analyzed, showing that group D (distilled water) presented 100% contamination compared to the other disinfectant solutions used. And finally group C (15% acetic acid) that did not present contamination or bacterial growth with 98.90% effectiveness. In general, 60% of the brushes evaluated did not present bacterial growth.



REFERENCES

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DISCUSSION & CONCLUSIONS

The highest percentage of effectiveness was observed in the concentration of acetic acid at 15%, which reduced the microbial load by 98.9%, which coincides with other studies carried out with acetic acid in lower concentrations, such as that of Fontana and González (8), which showed that *Streptococcus mutans* is sensitive in vitro to substances such as 5% vinegar, which showed a (96.73%), when treated for 20 minutes. And it differs with Jaramillo et al. (7), to combat *Streptococcus mutans*, used 0.05% cetylpyridinium chloride, concluding that it had a better antibacterial effect than 5% vinegar.

The second agent was 10% acetic acid, which managed to significantly reduce the bacterial load, which coincides with the study by Gaona et al. (5) regarding the effectiveness of acetic acid, compared to triclosan, it was more effective. 5% acetic acid and distilled water turned out to have less or no effectiveness compared to the other groups evaluated.

- The 15% acetic acid agent showed a higher level of disinfection in toothbrushes, because after being treated only 1.1% contamination was observed, therefore, its effectiveness was 98.90%, agent of choice.
- The 10% acetic acid agent proved to be 95.0% effective against the disinfection of toothbrushes inoculated with *Streptococcus mutans*, presenting slightly less effectiveness than the 15% acetic acid agent, despite its high degree of disinfection, turning in a second option to choose.
- The *Streptococcus mutans*, turned out to be susceptible in vitro to acetic acid in different concentrations, but nevertheless the microorganism presents greater sensitivity before the agent in concentration of 15%, for which the H1 is confirmed, that the higher the concentration of the acetic acid in the disinfection of toothbrushes inoculated with *Streptococcus mutans*, the greater the antibacterial effectiveness.