

Hong Kong Student Science Project Competition 2022

Template of Extended Abstract (Investigation)

(Word Limit: 1,000 words, Pages: 2 pages only)

Team Number: [SBBC146](#)

Project Title: [Investigation of hydrogen peroxide for cleansing property of stains](#)

Project Type: Investigation

To our best knowledge and after thorough literature research, as at [27/06/2022](#), there are / are no* similar works. If there are, the reference links are as below:

NA

The enhancement our project has made for the existing related products or research is summarized as below:

NA

*Please delete if not applicable. HKSSPC values the originality of works. Students must conduct literature research thoroughly to ensure that their works are unique, and to list relevant reference materials to complement the research or invention.

I. Background

- Provide background information of project and/or state the problem to tackle
- Provide highlights of the **literature review** with the support of pertinent and reliable references
- Provide an overview of work and mention the **research gap that the project is trying to fill**

Since hydrogen peroxide (H₂O₂) is a popular disinfectant in households and it can be purchased easily in drugstores, it is widely used for disinfecting household surfaces.

II. Objectives

- State the **aim(s)** of project
- This study aims to investigate the cleansing properties of hydrogen peroxide to porcelain and glass under acidic and alkaline conditions, and eventually deduce the effectiveness of inhibiting the growth of viruses in the biofilm.

III. Hypothesis

- Propose an explanation for a phenomenon and stating how the **hypothesis** can be tested by experiments

Hydrogen peroxide could remove the biofilm on surface and thus inhibit growth of bacteria and viruses

IV. Methodology

- List out the materials used
- Describe the **experimental protocol** including the set-up of **control experiment** (if any), **repeated experiment** (if any), and its scientific theory
- Indicate with the support of reasons, the **analysis** used in the investigation

Material used:

Glass beaker, porcelain cup, Graduated dropper, measuring cylinder, hydrogen peroxide solution, sulphuric acid, hydrochloric acid, ethanoic acid, sodium hydroxide, distilled water

1. Preparation of the stain
2. Removal of dirts using acids and hydrogen peroxide solution
3. Removal of dirts using alkali and hydrogen peroxide solution

V. Results

- Present the **data** with figures, tables or photos
- **Data analysis** (if any, with emphasis on data reliability and the reproducibility based on statistics)
- Interpret the results and its implication
- Discuss **limitation** and compare with existing related works (if any)
- Discuss the importance or impact of the research and how it is applicable to real problems

Hydrochloric acid and sulphuric acid can dissolve the stains better than ethanoic acid and water. This might be because both hydrochloric acid and sulphuric acid are strong acids.

Only the hydrochloric acid can clean the stain. During the experiment, when hydrogen peroxide solution is added into sodium hydroxide solution, effervescence occurs. Hydrogen peroxide might be quickly decomposed when sodium hydroxide is added.

VI. Conclusion

- Make a **data-driven** conclusion of the project and the way forward of the research
- Justify if the proposed project meets the objective(s)

Hydrogen peroxide could perform its cleansing properties under acidic conditions and its cleansing properties may be inhibited in alkaline conditions.

Our project is developed based on our school's previous project and the enhancement is as below:

NA