

A Comparative Study on the Efficiency of Home-Made and Commercially Available Floor Cleansing Agents

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Abstract: Household cleaning is an everyday activity. Cleaning is one of the major household tasks which involves considerable time and effort of the homemaker. The present investigation entitled "A comparative study on the efficiency of Home-made and commercially available floor cleansing agents" was conducted to prepare indigenous Home-made cleansing agents, and to compare the efficiency of the indigenous home-made floor cleansing agents with the locally available commercial ones. Home-made Multipurpose cleansing agents was found more efficient than commercial cleaning agents. The significance difference between the efficiency of degree of whiteness, eco-friendly and health friendly were observed by using the Home-made cleansing agents over commercial cleansing agents.

Keywords: cleansing agents, cleansing efficiency, Gray scale, Eco-friendly

1. Introduction

Today's modern home is loaded with toxic and polluting substances designed to make domestic life easier (Anonymous, 2010)^[1]. The average person has been so bombarded with luring and reassuring advertisements for these products that he/she actually believes that cleaning is impossible without them. Most of these commercial cleaners are poisonous to plants and cause domestic accidents through poisoning (Hathi, 2007)^[2].

The motto of eco-friendliness is to use less carbonic matter and to leave the environment as untouched as possible. By doing this, the balance of nature can be preserved for ever longer and perhaps a sustainable model of development and living can be reached in the near future.

'Green cleaning is gaining increasing popularity in homes, health care environs and manufacturing units due to growing global concerns about personal health, environmental damage, climate change, resource constraints and rising energy costs. In today's fast-paced life, earth-friendly or green cleaning products and techniques are increasingly becoming more affordable, effective and widespread (Jose 2011)^[3].

Therefore, "A comparative study on the efficiency of Home-made and commercially available floor cleansing agents" was planned with the following specific objectives: to prepare indigenous Home-made cleansing agents and to compare the efficiency of the indigenous home-made floor cleansing agents with the locally available commercial ones.

2. Material and Methods

Locale of the Study:

The study was conducted in the Laboratory of Family Resource Management of SHIATS Allahabad.

Selection of Flooring Materials

Marble, Grenite, Vitrified and Ceramic flooring material is widely used for kitchen work surfaces, walls, floorings, toilet bowls, and wash basins. So all white flooring materials having smooth finish and of size 6 inches x 6 inches were selected for the experiment. A total four flooring materials were used for the experiment.

Laboratory Experiment

Since most of the commercial agents are toxic / hazardous besides being costly, so it was considered important to prepare some simple, safe and, eco-friendly and easy to use household cleaners in laboratory. During the experimental phase, homemade cleansing agents were prepared and tested for their effectiveness.

Recipe 1 (Floor Cleansing Agent)

5 ml White Vinegar



10 ml water



Scrub the floor with a brush and the vinegar solution



Rinse with clean water

Recipe II (Indigenous Home-Made Multipurpose Cleansing Agents):

60 ml Baking soda

+

125 ml Ammonia

+

60 ml White Vinegar

+

100 ml Warm Water



Mix ingredients and store in tightly capped container.

Source: - Umscheid, S (2010)^[4]

Cleaning of tiles

Five ml of each of the two prepared cleansing agent and two commercial cleaners selected for the study were mixed with water measuring 10 ml in quantity separately, which was then poured in spray bottle. The mixtures were sprayed on the surface of the soiled tiles and left on tiles for 10 minutes. After that the tiles were washed in water with the help of a scrubber by applying even force.

Assessment of cleansing efficiency of home-made cleansing agents in terms of whiteness

Cleansing efficiency of prepared cleansing agents was evaluated in terms of degree of whiteness obtained after washing. To test the cleansing efficiency in terms of degree of whiteness of flooring materials, visual evaluation using **Gray Scale**^[5] was done by the three experts of Department of Family Resource Management.

This Gray Scale is for assessing the degree of change in shade and it consists of nine pairs of gray color chips, each representing a visual difference and contrast. It has 9 possible values: 5, 4-5, 4, 3-4, 3, 2-3, 2, 1-2, 1. highest value shows increasing degree of whiteness and lower value shows lower degree of whiteness.

Analysis of Data

The responses with respect to the entire variable were recorded in the form of tables. The data were analyzed by using the following statistical tools as per notations:

1. Simple Averages and Percentages
2. Mean scores
3. t- test

3. Result and Discussion

Evaluation of cleansing efficiency of home- made and commercial cleansing agents in terms of whiteness on four flooring surfaces.

The flooring surfaces were washed under constant washing conditions with Home-made Multipurpose cleansing agents (Recipe II) and most popular commercial cleansing agents ‘Lizol’ for comparing their stains removing efficiency on Marble, Granite, Ceramic and Vitrified flooring surfaces.

Marble Flooring Surfaces: To test the cleansing efficiency of Home-made Multipurpose cleansing agents (Recipe II) and commercial cleaning agents ‘Lizol’ for removing of tea/coffee, oil, grease, rust and turmeric stains on the marble flooring surfaces, and calculate the average scores with respect to degree of whiteness.

Table 1: Mean Scores with respect to cleansing efficiency of different cleansing agents for removing stains on marble flooring surfaces

S. No.	Name of stains	Home –Made Cleansing Agents		Commercial Cleansing Agents	
		Before applying (Score)	After applying (Score)	Before applying (Score)	After applying (Score)
1.	Tea/Coffee	5	7.7	5	6.7
2.	Oil	4	7.7	4	6.7
3.	Grease	3	6.4	3	5.4
4.	Rust	3	6.7	3	5.7
5.	Turmeric	4	6.7	4	5.7

It is evident from the data in Table 1 that home-made cleansing agents was more efficient for removing tea/coffee, oil, grease, rust and turmeric stains with maximum mean score of 7.7 followed by commercial cleansing agents 6.7. The above findings corroborate with

that of **Kratzer (2008)^[6]** who also reported that some acids remove hard water deposits and acidic washing agents are mainly used for removal of inorganic deposits like scaling and rust stains.

Table 2: Mean Scores with respect to cleansing efficiency of different cleansing agents for removing stains on granite flooring surfaces

S. No.	Name of stains	Home –made cleansing agents		Commercial cleansing agents	
		Before applying (Score)	After applying (Score)	Before applying (Score)	After applying (Score)
1.	Tea/Coffee	5	8	5	6.7
2.	Oil	4	7.7	4	7
3.	Grease	3	7	3	5.7
4.	Rust	3	7	3	6.7
5.	Turmeric	4	7	4	6.4

It is evident from the data in Table 2 that home-made cleansing agents was most efficient for removing grease stains with maximum mean score of 8.00 followed by commercial cleaning agent mean score 7.00. However, the commercial cleansing agents I and II were found to be less efficient as compared to home- made cleansing agents. Thus it can be concluded that all stains can be easily removed with the home-made cleansing agents.

Table 3: Mean Scores with respect to cleansing efficiency of different cleansing agents for removing stains on ceramic tiles

S. No.	Name of stains	Home –made cleansing agents		Commercial cleansing agents	
		Before applying (Score)	After applying (Score)	Before applying (Score)	After applying (Score)
1.	Tea/Coffee	6	8.4	6	7.7
2.	Oil	5	8	5	7.4
3.	Grease	3	7.7	3	7
4.	Rust	4	8	4	7
5.	Turmeric	4	8	4	7.4

It is evident from the data in Table 3 that home-made cleansing agents was more efficient for removing tea/coffee, oil, grease, rust and turmeric stains with maximum mean score of 8.4 followed by commercial cleansing agents 7.7.

The above findings corroborate with that of **Kratzer (2008)^[6]** who also reported that some acids remove hard water deposits and acidic washing agents are mainly used for removal of inorganic deposits like scaling and rust stains.

Table 4: Mean Scores with respect to cleansing efficiency of different cleansing agents for removing stains on vitrified tiles

S. No.	Name of stains	Home –made cleansing agents		Commercial cleansing agents	
		Before applying (Scores)	After applying (Scores)	Before applying (Scores)	After applying (Scores)
1.	Tea/Coffee	7	8.7	7	8.4
2.	Oil	6	8.7	6	7.7
3.	Grease	5	7.7	5	6.7
4.	Rust	5	8	5	7.4
5.	Turmeric	4	8.7	4	7.4

It is clear from the data in Table 4 that home-made cleansing agents was more efficient for removing all stains with maximum mean score of 8.7 followed by commercial cleansing agent mean score 8.4. Here again the

commercial cleansing agents were found to be less efficient as compared to home -made cleaners. This means home- made cleansing agents is effective in removing fatty and oily stains. These results are in line with the findings of **Admin (2010)^[7]** who also reported that cleansing

products with basic pH values are useful for removing fatty and oily soils from surfaces.

Comparison between efficiency of different cleansing agents with different types of flooring surfaces.

Table 5: Comparison between efficiency of various cleansing agents with various flooring surfaces

Flooring surfaces	Home-made cleansing agents	Commercial cleansing agents	Calculated t- value	Results
Marble	7.66	6.66	3.63	Significant
Granite	7.66	7	5.35	Significant
Ceramic tiles	8.33	7.66	4.70	Significant
Vitrified tiles	8.66	8.33	2.94	Significant

The t table value at 5% level of significance is 2.048

It is evident from the above table 5 that the marble was found to be the worst material among the other materials i.e. granite, ceramic and vitrified. It is also obvious that the home-made cleansing agents were found most effective and impactful than the commercial cleaners sold in the market. The commercial cleaners did not clean the marble efficiently whereas the home-made cleaners stood first in its efficiency. The Home-made cleaner was giving smooth appearance on surface as compare to the commercial cleaner which was giving a very rough appearance.

Since the calculated value of t is greater than the table value of t on 28 degrees of freedom and at 5 percent provability level. Therefore, it can be calculated from the above data that there is significant difference between the two cleansing agents.

4. Conclusion

It is concluded that the home- made cleansing agents for marble, granite, ceramic and vitrified flooring surfaces were more effective, eco-friendly and health friendly as compared to the commercial cleansing agents. The significant difference between the efficiency of degree of whiteness, eco-friendly and health friendly were observed by using the Home-made cleansing agents over commercial cleansing agents.

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