



THE EFFECT OF LAUNDRY DETERGENTS ON STAIN REMOVAL FROM COTTON FABRIC

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ABSTRACT:

Cleanliness is an important factor in human health and comfort; many people stain their clothes and don't know the best way to take the stain out. The main purpose of this study was to test and observe four different laundry detergents and how they affected stains. The methodology adopted for the study was to use white cotton fabric and four commercial laundry detergents and four biological stains were selected. The purpose of the experiment was to determine which laundry detergent would best remove different types of stains by measuring the amount of stain removed. This study helps the consumer, housewives to understand which laundry detergent worked best.

Keywords: - Cotton fabric, Detergents, Biological Stains.

INTRODUCTION :

Clothing is the most important need of mankind. The main purpose of clothing is protection against climate. Modesty is the second purpose of clothing. In olden days men used different types of material for covering their body. Slowly they started weaving by using grass and long leaves. After that invented natural textile fibers such as wool, cotton, silk, linen etc.

Presently cotton is the world's most used fiber. Every part of the cotton plant is useful. The fiber is the most important part of the plant because it is used in the making of cotton cloth. Cotton is number one fiber used for apparel in the United States. In 1994, 63 percent cotton was used for apparel, 29 percent for home furnishing and 8 percent was used for industrial type products and exportation. Cotton is a part of our daily lives from the time we dry our faces on a soft cotton towel in the morning until we slide between fresh cotton sheets at night. It has hundreds of uses, from blue jeans to shoe strings, clothing and household items are the

largest uses, but industrial products account from many thousands of bales.

Water cannot alone accomplish the cleaning process. It needs cleaning agent like soap to enhance its washing ability. Cleansing may be defined as removal of dirt from surface by means of a suitable surfactant.

The process of laundering as commonly used subject fabrics to the combined action of water, soap, temperature and pressure.

Washing of clothes is one of the oldest household tasks. But many women do not wash their clothes properly due to the lack of scientific knowledge of the type of washing method and detergents to be used for particular fabrics.

Today various types cleaning agents are coming in market. Consumer becomes confused in selecting the proper cleansing agent for a particular fabric. Some are the natural cleansing agents like reetha nuts, shikakai powder used in previous days for washing purpose. Synthetic cleaning agents are mostly used by the housewives than natural cleansing agents.

Detergents is cleaning agent that is used to wash clothes and other things. It is used in water to penetrate fabrics and help break down oils and fats. It contains a cleaning agent called a surfactant of surface- active agent. Surfactants attach themselves to dirt particles on solid materials. The molecules pull particles out of the material and hold them until they are washed away. Laundry detergent has gradually replaced soap as the laundry helper of choice because of its versatility. Laundry detergent can be effective in many types and temperature of water. Laundry detergent comes in both liquid and powder forms. Most laundry detergents also contain enzymes that help break down complex food stains.

MATERIALS AND METHODS:

For this study 100% cotton fabric was used. Four different brands of laundry detergents, Ariel, Surf Excel, Rin and Tide were used in this study. The sample size was 10 cm. x 10 cm. were taken for this study. Each samples were spotted with four biological stains such as Blood, Curry, Tea and Turmeric. A set of these spot stained samples were fresh and set for 12 hours.

Spotted sample were immersing with each detergent solution for 15 minutes. Amount of stain removal were noted down. Amount of stain removed was assessed by comparing the treated samples with control(stained) samples and denoted as rating **5** was denoted as stain undetectable similarly very slight staining was denoted as rating **4**, slight staining was denoted as rating **3**, moderate staining was denoted as rating **2** and heavy staining was denoted as rating **1**.

RESULT AND DISCUSSION:

Efficacy of detergents in removing stains on white cotton fabrics.

Table 1 provides information pertaining to the effect of different detergent on blood stain removal from white cotton fabric at different

time duration. It was apparent from the information that during 0th hour detergent Ar, SE, Td and Rn indicated rating of 4.7 on room temperature.

Furthermore on 12th hour detergents Ar, SE and Td showed rating of 4.7 whereas detergents Rn, showed rating of 3.7 at room temperature. The study results indicated that removal of blood stains from white cotton fabrics as a function of selected detergents was good, if it is removed immediately.

Table 2 Provides information pertaining to the effect of different detergent on curry stain removal from white cotton fabric at different time duration. It was observed that during 0th hour all detergents Ar, SE, Td and Rn indicated rating of 4.7 on room temperature.

Moreover on 12th hour all detergents Ar, SE, Td and Rn indicated rating of 2.7 on room temperature.

- The study results indicated that the curry stain removal from white cotton fabrics as a function of selected detergents was good if it is removed immediately.

- Furthermore, it was revealed by the data that the stain setting time has adverse effect on the stain removal ability of all the detergents i.e. the efficacy of the detergents to remove curry stains from white cotton fabrics was less if the curry stain was allowed to set for 12 hrs.

Table 3 shows information pertaining to the effect of different detergent on Tea stain removal from white cotton fabric at different time duration. It was observed that during 0th hour detergent Ar, SE, and Td indicated rating of 4.7 on room temperature. whereas detergents Rn, showed rating of 3.7 at room temperature.

Furthermore on 12th hour detergents Ar and Td indicated rating of 4.7 at room temperature. whereas detergents SE and Rn, showed rating of 3.7 at room temperature.

- The study results indicated that the Tea stain removal from white cotton fabrics as a

function of selected detergents was good if it is removed immediately.

Table 4 provides information pertaining to the effect of different detergent on Turmeric stain removal from white cotton fabric at different time duration. It was observed that during 0th hour detergents SE, Td and Rn indicated rating of 1.7 on room temperature. whereas detergents Ar, showed rating of 2.7 at room temperature.

Moreover on 12th hour detergents SE, Td and Rn indicated rating of 1.7 on room temperature. whereas detergents Ar, showed rating of 2.7 at room temperature.

The study results indicated that the Turmeric stain removal from white cotton fabrics as a function of selected detergents was good if it is removed immediately.

- Furthermore, it was revealed by the data that the stain setting time has adverse effect on the stain removal ability of all the detergents i.e. the efficacy of the detergents to remove Turmeric stains from white cotton fabrics was less if the Turmeric stain was allowed to set for 12 hrs.

CONCLUSION :

- The study result showed that all four detergents work effectively on Blood, Curry, Tea and Turmeric stains, for fresh and set for 12 hour set stains. Set stain took more time to be removed than fresh stains. But all four detergents did not work best on Turmeric stain for fresh and set for 12 hour set stains. Each stain and detergent have its own performance profile. Remove stains while they are fresh. Time delay enhances the fixation of stain with fabric.

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Table 1: Blood stain removal from white cotton fabric (Mean Value)

SN	Detergent	0 hr.	12 hr.
1	Ariel (Ar)	4.7	4.7
2	Surf Excel (SE)	4.7	4.7
3	Tide (Td)	4.7	4.7
4	Rin (Rn)	4.7	3.7

Table 2: Curry stain removal from white cotton fabric (Mean Value)

SN	Detergent	0 hr.	12 hr.
1	Ariel (Ar)	4.7	2.7
2	Surf Excel (SE)	4.7	2.7
3	Tide (Td)	4.7	2.7
4	Rin (Rn)	4.7	2.7

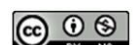


Table 3: Tea stain removal from white cotton fabric

(Mean Value)

SN	Detergent	0 hr.	12 hr.
1	Ariel (Ar)	4.7	4.7
2	Surf Excel (SE)	4.7	3.7
3	Tide (Td)	4.7	4.7
4	Rin (Rn)	3.7	3.7

Table 4: Turmeric stain removal from white cotton fabric

(Mean Value)

SN	Detergent	0 hr.	12 hr.
1	Ariel (Ar)	2.7	2.7
2	Surf Excel (SE)	1.7	1.7
3	Tide (Td)	1.7	1.7
4	Rin (Rn)	1.7	1.7

Fig. 1 BLOOD STAIN REMOVAL FROM WHITE COTTON FABRIC

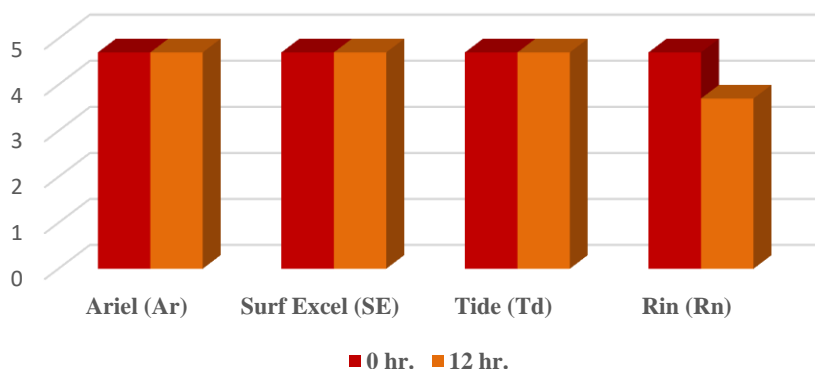


Fig. 2 CURRY STAIN REMOVAL FROM WHITE COTTON FABRIC

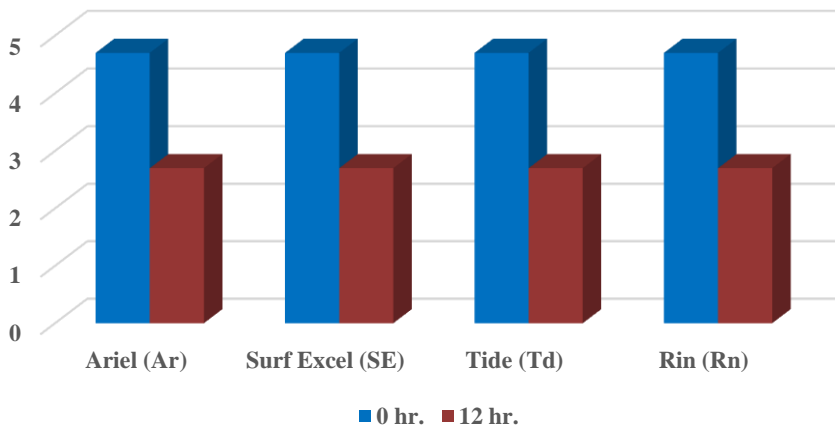


Fig. 3 TEA STAIN REMOVAL FROM WHITE COTTON FABRIC

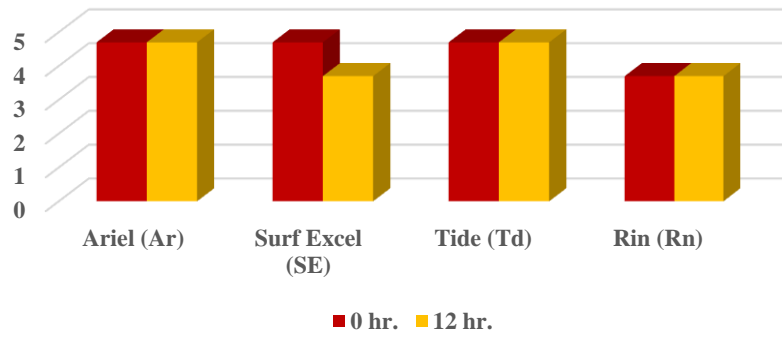


Fig. 4 TURMERIC STAIN REMOVAL FROM WHITE COTTON FABRIC

