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Identification Common Microbes Observed on Polyester Tufting

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Abstract**—**Tufting carpet is a very suitable substrate for growing microorganism such as pathogenic microbes, due to the direct touch with human body, long washing periods and laying on the floor; in fact there are 3 major problems: To risk human health, Prepare bad odors and Destruction of the products.. In the presented research, for investigation of presence most common microbes on polyester tufting, first goods laid in a public place (in the corridor fair) for 30 days and the existence of some microbes were investigate on it with two methods of enrichment in nutrient environments such as thioglycolate and noutrunt brath, and shake the dust off the polyester tufting onto cultivation mediums such as blood agar and noutrunt agar. After the microorganism colonics are grown, the colonies were separated and six microbial tests such as cataloes and sitrat were carried out in five phases on the colonics for identifying the varieties of bacteria. As a result of tests, 5 type of bacteria, such as Escherichia coli, staphylococcus saprophytic as were identified. Each of the mentioned bacteria can be seriously harmful for the heath of human.

Keywords**—**Microorganisms, Polyester tufting, Escherichia coli, Staphylococcus saprophytic, Blood agar, Thioglycolate

I. INTRODUCTION

ACTIVITY of microorganisms on the textile products will be three major problems: to risk human health, prepare bad odors and destruction of good. An intrinsic property of fibers develops a suitable environment for growing microbes and it will be intensified through heat and humidity [1],[2]. Microorganisms often need a thin of water that can be found on skins and textile goods. Between these microorganisms, some of them can be harmful for human and textiles [3],[4]. Bacteria are especially abundant and are usually divided into several classes based upon the temperatures at which they grow best. The low temperature bacteria are the psychrophiles, which can grow at temperatures down to -10°C, but whose optimum temperature is 15°C (59°F) or lower. The mesophiles live at medium temperatures, 20-45°C (68-113°F), and include human pathogens. Thermophiles thrive above 45°C (113°F), and some live at or even above the boiling point of water. The most of positive and negative gram bacteria are in mesophiles group that attack textile goods [3[,[5],[6]. Floor covering textiles such as carpet is a suitable medium for growing microorganisms.In Iran, the Polyester tufting carpet is one the first popular covering for the floor, and these carpets are suitable place for microorganism growing, due to the direct touch with human body, long washing periods and laying on the floor. In this research, the Polyester tufting carpet is examined in a period of time, for the activity of the Bacteria by using morphological bacteria and suitable condition some dangerous bacteria were observed.

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II. MATERIAL AND METHODS

A. Material

The carpets were purchased from KAYAK-Yazd CO. The pure microbes and environment test materials were supplied from the Bouali Hospital, Tehran, Iran and all tests were done in the Laboratories of Tarbiat modarres University, Islamic Azad University Science and Research Campus Branch and Islamic Azad University of Shahre-Rey in 2010.

B. Methods

The steps of this study were as follows:

1. *laid the carpets in the public place (in the corridor fair):*

Some Polyester tufting carpet are laid with the same quality in the corridor fair for one month that the amount of stepping on them is 1000 daily and is about 25000 monthly.

2. *Providing the conditions in order to grow the colony of the bacteria's on the carpets is in two ways: riching and shaking.*

A. Richening the bacteria on fibers in rich bath:

In this Method, we choose some samples of fibres from Different parts of carpets and placed them in rich bathes like thioglycolate and nutrient broth to help the microorganism to rich. And after 24 hours, this Liquid of bathes was in the platting–out method in rich blood agar, nutrient agar and EMB position. We provide growing conditions as follows: the temperature was 37 ºC, and the time period was 48 hours. This procedure results in bacteria colonies.

B. Shaking methods on the enrichment environment.

This method was for paying more attention and completing the previous method. In this method, different parts of Carpet were shacked on prepared environment like thioglycolate, Nutrient agar, EMB and they prepare the suitable conditions, so that we observed the microorganism colonies after a certain time.

3. *Separating the grown colonies and testing them for identifying the genre and type of the bacteria:*

In this level, exiting colonies on the culture medium were separated carefully with phildopelatin contribution, and each one of these colonies was performed on 6 levies of bacteriology experiment and specialized test. These experiments included thermal colony Catalase, Oxidas, Simon citrate, urea and TSI tests. The presence and kind of fungus were determined just by observation and experimentally and no particular test has done.

A) Thermal - Coloring Test:

Recurring instances: 1- Viole dojansin, 2-Logol, 3-AlcoholAcetone, 4- Fuchsine

First, take a colony violated to the bacteria from cultureMedium and delude it by physiological saline and appoint it on the lamina within 60 seconds in the vicinity with a Drop of viole dojansin matter. Then lamina is carried under the fancet and a drop of logol is trickled onto the Lamina. After 30 seconds, lamina is again carried under faucet, and acetone alcohol drop is added to it. In the case of the positive warm bacteria, colour of the background remains violet, but in the case of the negative warm bacteria's, violet color disappears. Afterwards, surface of lamina is carried under faucet and a drop of fuchsine is trickled to it and the result is studied after 30 seconds. There was no coloring for the positive warm bacteria, but in the case of the Negative warm bacteria, red–color is appeared.

B) Catalase:

A drop of eau oxygenize is added to microbes suspense, and the result is examined from its oxygen bubbles Point of view. If gas is not created, it shows the experiment is negative. Such an observation fact could be very different for bacteria's according to their negative or positive manner.

C)Oxidase:

To per for this experiment, one-percent Parapheny lend amine–chloride dimethy solution is used. In this case, several mille–litre of this consume were trickled up to the colonies which are under experiment. If after 30–40 seconds, reddish brown is appeared, it indicates the Positive ness and if it was colorless, it shows that the experiment was negative.

D) Citrate test:

Microbe colonies are inseminated in Simon citrate. After 2 hours, if the blue color is observed on this medium, it indicates to haring a positive experiment, and if there wasn't at serviced any change of color and the medium keeps its green colour, it represents that experiment is negative.

E) Urea test:

Some of the under–test microbe colonies pumped to a Urea circum ference and put it in 37ºC temperature. Color reaction result is studied after, 24 hours If the reddish color is observated refer to positive and if no enrages of color is showed, it refer to a negative experiment.

F)*Tsi test:*

It is a red color medium to control and recognize Aerobic and anaerobic batteries. This medium is In flounced by the aerobic and anaerobic bacteria and The related medium acidized in surface for aerobic Bacteries and in under-mentioned for anaerobic bacteria Changes to yellow colour. Finally, the result of reactions of all colonies to these tests. Leaded to the observation of five Batteries that their names and chemical properties of them are shown in Table 2.

III. Results And Discussion

Microorganisms can adopt themselves with different environmental conditions and generally they need moisture, material and suitable temperature to order to grow. The result of reactions of all colonies to these tests. Leaded to the observation of five Bacteria that their names and chemical properties of them are shown in Table 1. The presence and kind of five funguses were determined by observation and experimentally, including Bacillus, Penicillum, Aspergillus, Fusarium and Mucor.

Table 1: Properties Chemical of organized micro organisms

number	micro organisms	Thermal - coloring test	Catalase	Oxidase	Citrate test	Urea test	Tsi test
1	*Escherichia coil*	Bacille -	+	-	-	-	Acid/Acid
2	*enterobacter*	Bacille -	+	-	+	-	Acid/Acid
3	*staphylococcus saprophytic us*	Cocce -	+	*	-	-	*
4	*pseudomonas*	Bacille -	+	-	-	-	Alk/Alk
5	*bacillus*	Bacille +	+	-+	-	-	Alk/Alk

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