

Microbiological Study: What to Do with Ties?

José Humberto Cardoso Resende¹; Ana Letícia P. Guimarães²; Fernando Augusto de Oliveira²
Jairo Ledra Garcia²; Matheus B. de Souza²; Milena P. de Araújo Oliveira²; Natallia R. Eduardo²
Pedro Henrique M. Victor²; Raphaela C. de Souza²; Thamyris S. M. de Paiva²
AdryenneCallegaris C. Lopes³; Emídio Silva Falcão Brasileiro⁴.

Abstract

It is known that social ties are worn by professionals as men's accessories. It is common among doctors, lawyers, politicians and other professionals. We decided to carry out a pathological and microbiological study to investigate whether this accessory, which is usually stored in cabinets or other closed spaces, is free of contamination. We randomly chose ten (10) ties from different people who had never been laundered. Collection was carried out through Swabs and Petri dishes. To our surprise, growth of fungi was already perceptible after 24 hours in all samples, including gram-positive and gram-negative bacteria, yeast and cocci. Based on this a result, we advise against the use of this accessory in order to avoid possible transfer of these microorganisms from one person to another through contact. They should be used only after washing or sterilization in sterilization wraps.

Keywords: Fungi; Bacteria; Virus; Necktie; Contamination; Yeast

Introduction

Besides being considered elegant accessories, it is known by people in Brazil and worldwide that ties are part of men's clothing. They are usually hung in closed wardrobes for years and years and are never washed and ironed by their users. One in 1,000 users sanitize their ties before or after wearing them. They do that for improving their visual appearance or even for impressing others. There are cases of fathers who keep their wedding ties to use on their sons' wedding day, either because of family tradition or even superstition. Lawyers, doctors, politicians and teachers were the professions that most used the ties of a research study. We believe that after this work, we are able to decree “the end of wearing ties” as complementary pieces of men's clothing. And if men decide to use a tie, they will be aware that it is the most contaminated item of their wardrobes.^{4,5,6} Gram-positive and gram-negative bacteria and other cocci and yeast were grown using petri dishes and swabbing, removed from ties. The ties used in the study were numbered from 1 to 10 for identification (fig. 1).



Fig. 1 - Ties numbered from 1 to 10.

¹ UNIFAN, Goiânia, Goiás, Brazil; Phone: +556230949494, Fax: +556230908714, Mobile: +5562997014170 Email: jresen99@hotmail.com

² UNIFAN –Academic League of Microbiology.

³Laboratory of CLÍNICA BRASIL, Goiânia, Goiás, Brazil; Phone: +556235454000.

⁴UNIFAN, Goiânia, Goiás, Brazil; Phone: +556230949494, Fax: +556230908714.

Material and Method

We selected 10 ties of different men from different professions and numbered them from 1 to 10. The materials used in the process of isolation and pure culture were:

- Swabs;
- Nutrient broth in tubes with growth;
- Inoculation loops;
- Petri dishes with sterile nutrient agar.

The material was collected at the indicated site (fig. 2), about 30 cm from the wide extremity, towards the tie knot. Method used: Swab, lightly soaked in saline solution and swabbed in the same site. The material was then inoculated in enriched medium (BHI) and left in an oven (30°C to 37°C) for 24 hours until the first reading and for 48 hours until the second reading. After 24 hours, sediment formation, homogeneous turbidity and/or a surface film were observed (fig. 3). The tie n° 2 was the only one presenting growth after 48 hours of inoculation. In the next step, with a previously sterilized loop, petri dishes (Blood Agar), numbered according to the corresponding tie, were inoculated by streaking on the surface of the plate to obtain pure colonies. After 24 hours in the oven, microbial growth was observed in all plates (Table 1).

Slides were prepared and stained by the gram method to differentiate bacterial species (gram-positive and gram-negative) (Table 2). Bacterial and fungal species were isolated and inoculated in specific media for identification of pathogens through microscopic analysis^{1,2} (Table 3).



Fig. 2 - Full view of the tie and detail of the collection site.



Fig. 3 - Test tubes numbered and showing the growth of microorganisms.

Box 1

First report 24 h after inoculation in Petri dishes:



Fig. 4 - Tie n° 1



Fig. 5 - Tie n° 2



Fig. 6 - Tie n° 3



Fig. 7 - Tie nº 4



Fig. 8 - Tie nº 5



Fig. 9 - Tie nº 6



Fig. 10 - Tie nº 7



Fig. 11 - Tie nº 8



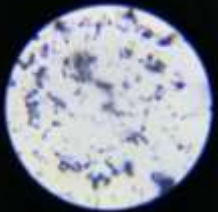
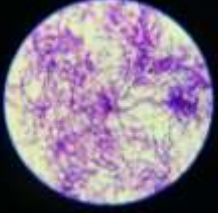
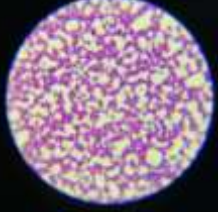
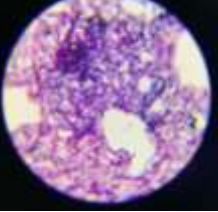
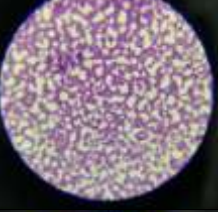

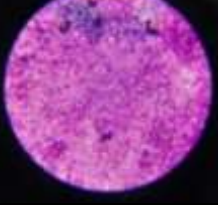
Fig. 12 - Tie nº 9

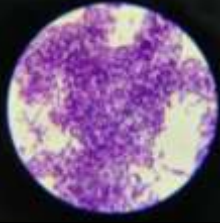
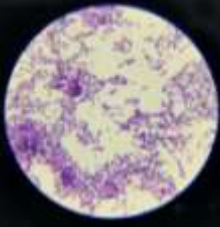
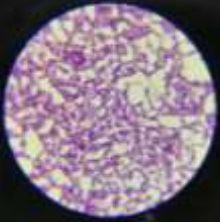


Fig. 13 - Tie nº 10

Box 2



Reading of slides by Gram staining:






Ties	Bacterioscopy	Slide	
1	Gram-negative rods, yeast and rare gram-positive cocci.		
2	Gram-negative rods, gram-positive rods and yeast.		
3	Gram-positive cocci.		
4	Gram-negative rods, gram-positive rods and yeast.		
5	Gram-positive cocci, yeast.		
6	Gram-positive cocci.		
7	Gram-negative rods, gram-positive cocci and yeast.		

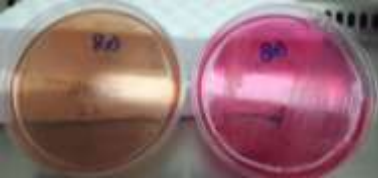


8	Gram-negative rods and gram-negative rods.			
9	Gram-negative rods and gram-positive rods.			
10	Gram-negative rods and gram-positive rods.			

Box 3

Identification on specific media:

Ties	Specific media	Identification of microorganisms
1		Presence of yeast-like structures
2		Presence of yeast-like structures and coagulase-negative staphylococci ³

3		Coagulase-negative staphylococci ³
4		Presence of yeast-like structures
5		Presence of yeast-like structures and coagulase-negative staphylococci ³
6		Coagulase-negative staphylococci ³
7		Presence of yeast-like structures

8			Presence of yeast-like structures and coagulase-negative staphylococci ³
9			Presence of yeast-like structures and coagulase-negative staphylococci ³
10			Presence of yeast-like structures and coagulase-negative staphylococci ³

Discussion

We know that there will be people who, in defense, will dare to say that they have always washed their ties after use, which is understandable. The degree of contamination of the ties reached a level where all the pieces analyzed had parasite forms as seen in the petri dishes.^{7,8,9} As ties have always been accessories of clothing, researchers have to offer an opportunity for knowledge hitherto unknown due to lack of interest in carrying out scientific research on the subject. It is worth mentioning that it is difficult to change well established habits and attitudes. Thus, we raised a question to be discussed and set precedents for future research that may further aggravate the use of this accessory. The slides will be stored for consultation by researchers.^{12,14}

Conclusion

Although being a part of an elegant garment, we demonstrated through microbiological studies that ties have a degree of contamination that leads to the contraindication of their use to avoid the proliferation of bacteria and fungi, and even viruses. In view of this scientific conclusion, we advise users of ties, especially those who use them because of their profession, to wash and iron them, or even sterilize them using sterilization wraps before and after use.^{10,11,13}

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