

IDENTIFICATION OF THE STAPHYLOCOCCUS AUREUS FROM CULTURAL NATURES

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Abstract

Staphylococcus Aureus, opportunist germ can become pathogen either by the multiplication and invasiveness causing infectious processes of invasive type, or by multiplication and toxigenicity causing toxic infections. The isolation of the Staphylococcus is made on the agar-blood or on the hyper chlorite medium for the products intensely contaminated and hemolysis is the main hemolysis secreted by Staphylococcus Aureus and the main factor of pathogenicity of this bacterial species. The mechanisms of virulence of the bacteria Gram negative are much more complex and various compared to those of the bacteria Gram positive.

The staphylococci gastroenteritis is caused by the ingestion of some food, that contain one or more enterotoxins, produced only by some staphylococci species and strains.

Although the production of enterotoxins is considered generally as being associated with the strains of Staphylococcus Aureus coagulase and thermo nuclease positive, many of the species of staphylococci, that don't produce either of these enzymes produce enterotoxins.

Keywords: pathogenicity, agar – blood, hemolysis, food poisoning

INTRODUCTION

The staphylococci are positive gram bacteria, non sporulating, non capsulated. On the smear performed from the culture of solid medium the staphylococci appear disposed in irregular batches similar to the grape cluster. On the smear performed from culture in the liquid medium or from pathologic product the staphylococci are disposed extracellular, in short chains, pairs or isolated cocci. There are non friendly germs that can be cultivated on simple nutritive mediums, on complex mediums as on hyper chlorite mediums.

The staphylococci produce non-diffusible pigment, that colors only the bacterial colony but not also the culture medium, of golden yellow color. The pigment genesis is more intense at the room temperature and in the presence of the oxygen. On the mediums with blood appears beta hemolysis.

The staphylococci are resistant to the conditions of external medium. They resist in cultures at the refrigerator for some months, in dry fastening 2-3 months. They are relatively resistant to antiseptic and disinfectants and

the gamma radiations, at the action of colorants. They can be destroyed in 60 minutes at the temperature of 60°C, are sensitive to bacteriophages, to UV radiations.

The following products have bacteriostatic effect on the staphylococcus strains: lemon, pineapple, apple, apricot, peaches juice, chocolate, cocoa.

The staphylococci are especially resistant to antibiotics. Over 95% of the staphylococci are resistant to penicillin. The staphylococci strains resistant to methicillin are also resistant strains exteriorizing the concomitant resistance toward cephalosporin, erythromycin, clindamycin.

They are still sensible to vancomycin, although in some countries were noted already some strains resistant also to this reserve antibiotic.

MATERIAL AND METHODS

In order to accomplish the objectives proposed was used a prospective study.

In this regard were analyzed all the pathologic products harvested on complex nutritive culture mediums, as is the blood-agar medium, the solid Chapman hyper chlorite medium and liquid hyper chlorite, incubated at the temperature of 35-37°C, in aerobiosis, for 24 hours.

Methods of seeding on solid medium

- Is loaded the plastic inoculated loop of platinum sterilized with pathologic product
- Is loaded the plastic inoculated loop on culture medium
- Is seeded a first sector
- From the first seeded sector are traced some parallel striae clockwise
- Is continued the seeding by parallel striae, terminating by a stria in jag
- After each stage is sterilized the plastic inoculated loop without loading in pathologic product
- Methods of seeding on liquid medium
- Is loaded the plastic inoculated loop of platinum sterilized with product
- Is homogenized the harvested products in the liquid culture medium.

RESULTS AND DISCUSSIONS.

Table 1.

Isolation on culture mediums of <i>Staphylococcus Aureus</i>		
Isolation on blood-agar medium of the <i>Staphylococcus Aureus</i>	Isolation on the Chapman medium of <i>Staphylococcus Aureus</i>	Isolation on the hyper chlorite medium of <i>Staphylococcus Aureus</i>
+ β hemolysis	+ Decomposing of the mannitol	+ Uniform agitation

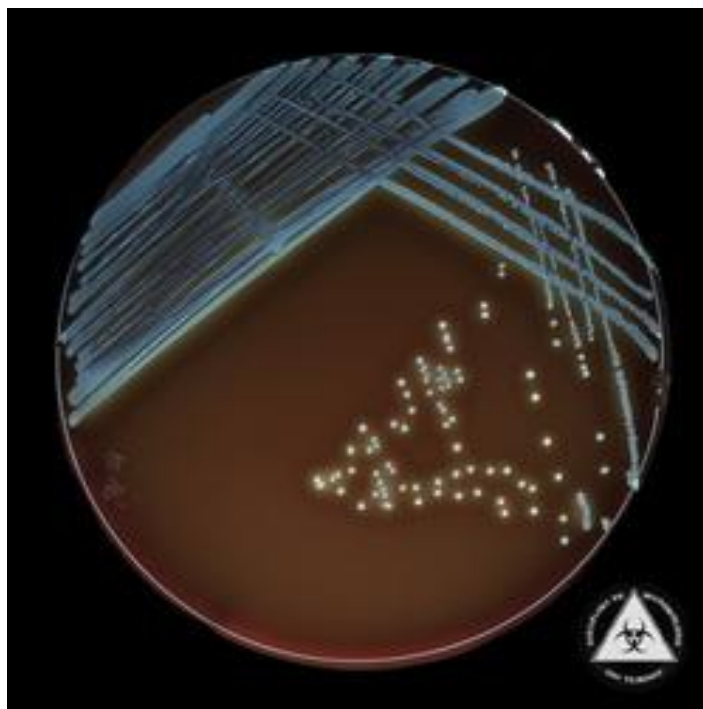


Fig. no. 1. *Staphylococcus Aureus*
Pure culture, blood agar. Colonies S, β -hemolytic
Source - atlas.microumftgm.ro\bacteriologie\bactgen\cbio.html

The staphylococci being non demanding germs, can be cultivated on simple nutritive medium, complex or liquid. Following the isolation on culture medium, incubated at the temperature of 37°C, in aerobiosis, for 24 hours, was underlined the presence of *Staphylococcus Aureus* by its growth under the form of colonies of S type, round colonies, with regulated margins, crowned, thin surface, translucent, of yellow – golden color. The

intracellular pigments are not diffused in the medium but only color the colony.

The pigment genesis has a variable nature, is more intense at the room temperature and in the presence of the oxygen.

On the Chapman culture medium was identified the presence of colonies of S type, creamy, round, with diameter between 2-3 mm, regulated margins, crowned and glossy but also the fact that the color of the phenol red indicator varied in yellow, thus mannito positive.

The blood agar culture medium places the accent on the presence of β hemolysis, the blood is decomposed totally, around the colony appears a clear, transparent area.

Not all the strains of *Staphylococcus Aureus* hemolysin pigment.

The lack of specificity of the hemolytic and pigmentogen natures constitute an argument for the disavowal of some formulations of the "hemolytic gold staphylococcus" type in the bulletins of bacteriologic analysis.

In the liquid medium was produced an uniform agitation with moderated deposit in the bottom of the tube.

The strains of staphylococcus with deficiencies of the cellular wall, coming from tests that include antimicrobial substances or submitted to some thermal treatments, can give birth, on solid medium, to some colonies of G type (glossy), small or G-R (rough), small, with imperfect margins, granulated, without hemolysis.

These types of micro organisms don't agitate the liquid medium in which they are seeded and appear as a granular deposit in the inferior part of the culture tube.

Seldom we meet in cultures coming directly from samples, M colonies, mucous membranes, characteristic to the capsulated strains.

CONCLUSIONS

The isolation of the staphylococcus was accomplished on blood-agar and on the hyper chlorite medium, on the solid and on the liquid one.

At the basis of the identification of the isolates stood the culture natures, colonies of S type on solid mediums, the presence of the non-diffusible pigment, uniform agitation with moderated deposit at the bottom of the tube and the decomposition of the mannitol.

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