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## RESEARCH ARTICLE

### SURFACE TENSION X ICTERYCEA PROCESSES

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#### ABSTRACT

We conducted a short report on the topic: Superficial Tension (ST) and Icterycea Processes (IP). Basically the strength that acts on the surface of the liquids is named ST, the IP is characterized by the yellow coloration of the skin, and mucous membranes that occurs as a consequence of liver diseases (increased bilirubin level). The collected data expose how much ST is important to IP considering that the intermolecular forces on the surface can be broken by increasing the concentration of substances that lower ST, thus releasing more bilirubin in the current Blood.

##### Key Words:

Cohesive Forces, Surface Tension, Bilirubin, Icterycea Intense, Short Report.

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## INTRODUCTION

To Superficial Tension (ST) arises in liquids as a result of the imbalance of the forces acting on the molecules (MLC) of the surface in relation to those inside the solution, the MLC of any liquid located in the interface "Liquid Air" They perform a smaller number of intermolecular interactions compared to those inside the liquid (Behring *et al*, 2004). The Icterycea Process (IP), occurs as a consequence of liver and gallbladder diseases, some types of anemia and hemolysis, its main symptom is yellowish coloration that usually arises in principle in the sclerotic of the eyes, then in the skin and mucous membranes, currently approximately 60% of newborns show to be icteric during the first week of life (South-Paul *et al*, 2010).

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## MATERIALS AND METHODS

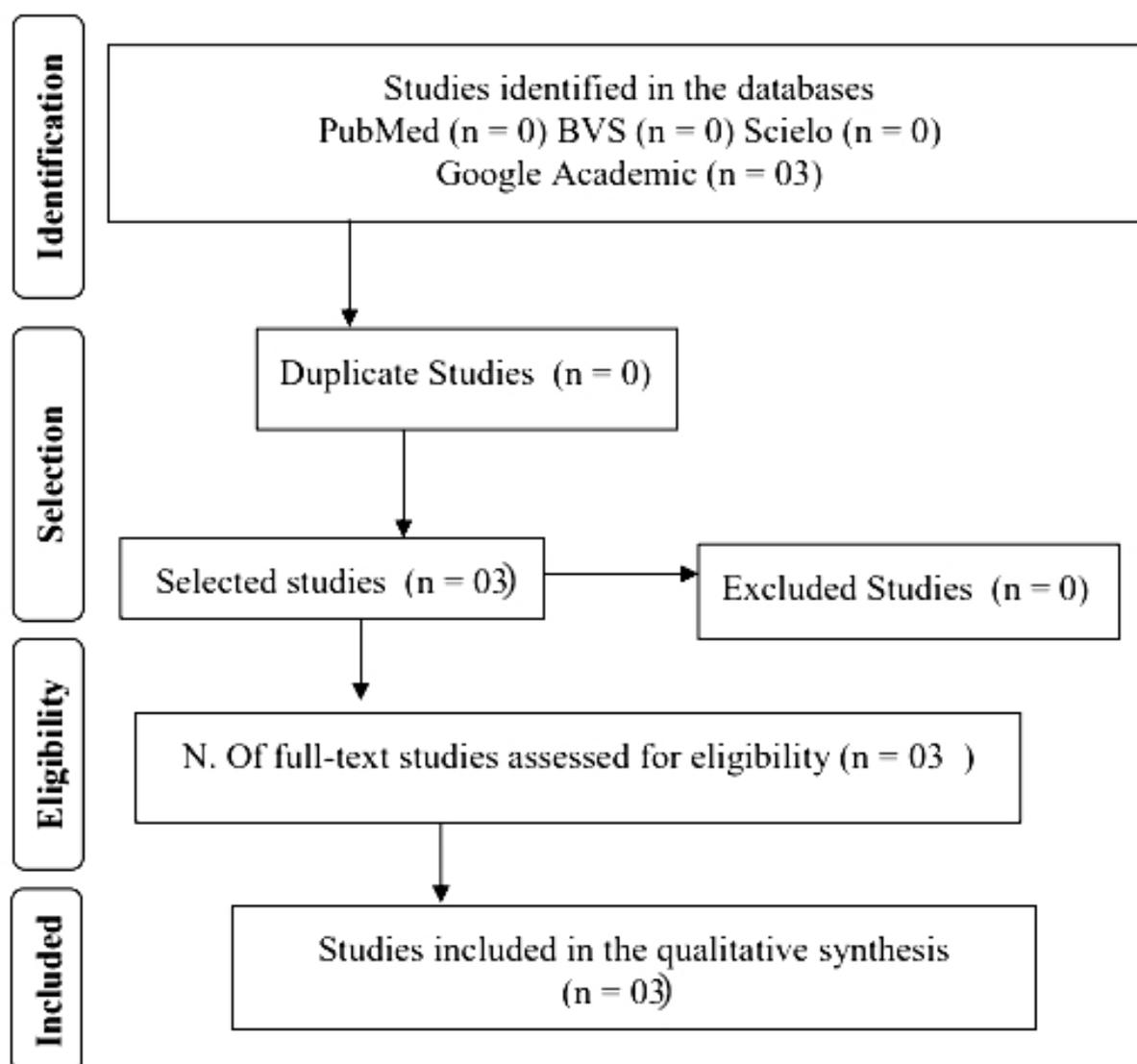
The bibliographical searches occurred on December 08 / 2018. They were conducted in the following databases: PubMed; BVS and Scielo, but unfortunately on these platforms we did not find any text consistent with the theme. We pursued the search platform called Google Academic, where we found three texts included in the basement of this report. The searches were performed without restrictions of years, text, or language, we made use of the descriptors "superficial tension, icterycea and intense icterycea" and their respective synonyms in the languages English, Portuguese (Brazil), and Spanish.

## RESULTS AND DISCUSSION

Behring and Collaborators (2004), affirm that cohesion forces decrease the surface area occupied by the liquid, often drops adopt spherical shape, the difference of pressures through curved surfaces causing the effect called Capillarity.

Table 1. Studies used to support this short report.

Author	Title	Periodic	Year of publication	Approach
Gikovate, F.	Fisiopatologia da icterícia (Pathophysiology of ictericea)	<i>Revista de Medicina</i> ( <i>Medical Journal</i> ).	1945.	Clinic on the dimensions and properties the processes of Icterycea
Laus Filho, J. A.	Valor propedêutico das bilirrubinas (Propaedeutic value of Bilirubin).	<i>Revista de Medicina</i> ( <i>Medical Journal</i> ).	1947.	Clinic on the dimensions and properties of bilirubin.
Behring, J. L. et al.	Adaptação no método do peso da gota para determinação da tensão superficial (Adaptation in the drop weight method for determining the surface tension).	<i>Química Nova</i> (New Chemistry)	2004.	Academic about the properties of Surface Tension.



This strength that acts on the surface of liquids is called superficial tension (ST) (Behring *et al*, 2004; South-Paul *et al*, 2010). The Icterycea Process (IP), is understood by the retention of bilirubin and hyperbilirubinemia, cause of pi that is exteriorized by the yellow coloration in the skin and mucous membranes; bilirubin has as its fundamental substance, hemoglobin, where through its splitting occurs the hemin giving rise to bilirubin (Gikovate, 1945); Percília, (2017), discusses that Rudolf C. Virchow (1945), was the first to raise this hypothesis by verifying the formation of a yellow pigment in the old hematomas. A practical experience using three toothpicks, detergent and water. If we fill the  $\frac{3}{4}$  of H<sub>2</sub>O and put two toothpicks side by side and add detergent to the tip of the third toothpick, touching the middle of the floating toothpicks with the tip of the third toothpick we perceive that they depart, as if the third toothpick broke the connection between the two (Behring *et al*, 2004; De Medeiros *et al*, 2013).

This connection was broken at the time it touched with detergent the center of the toothpicks, the answer for the link between the toothpicks is the ST. The MLC of H<sub>2</sub>O on the surface suffer attractions for the bosom of the liquid, not suffering attractions in the opposite direction, that is, when adding the toothpicks to the surface, part of these attractions are compensated, the detergent has function of lowering the ST, facilitating removals of fats ( Medeiros Resende and Maia, 2015). When the detergent stick touches the center of the objects, the ST at this location abruptly low, the toothpicks are instantly pulled by the still existing ST, and their intensity is greater on the periphery of the container. The studies of Bergh (South-Paul *et al*, 2010), found in certain direct and indirect bilirubin icterycia. In pure mechanical icterycia, the presence of direct bilirubin is always verified (Laus Filho, 1947; Behring *et al*, 2004); according to the hypothesis of Mc nee, it is bile that was excreted and reabsorbed again and in other cases of icterycia we found only the indirect reaction (Behring *et al*, 2004; South-Paul *et al*, 2010). We found the biphasic reaction, simultaneous presence of the two types of pigments (Gikovate, 1945). In the exclusive cases of indirect reaction to bilirubin is of extrahepatic origin and had not passed through the liver (Gikovate, 1945; Laus Filho, 1947).

A practical experience using three toothpicks, detergent and water. If we fill the  $\frac{3}{4}$  of H<sub>2</sub>O and put two toothpicks side by side and add detergent to the tip of the third toothpick, touching the middle of the floating toothpicks with the tip of the third toothpick we perceive that they depart, as if the third toothpick broke the connection between the two (Behring *et al*, 2004; De Medeiros *et al*, 2013). Studies identify the types of hemolytic icterycia in which the liver does not eliminate excess bilirubin, and another type that would be the true retention (Gikovate, 1945). There is catarral icterycia, in hepatites, in general Infectious (Gikovate, 1945; Behring *et al*, 2004; South-Paul *et al*, 2010). In these circumstances, it seeks to maintain the obstructive theory of icterycia, saying that the intrahepatic bile ducts would be obstructed and the bile would return again to the blood (Laus Filho, 1947). To explain these forms of jaundice, which in most cases have a biphasic

Bergh reaction, we admit the two mechanisms, the retention is explained by the lesion gives the liver cell, and the resorption by the disorganization of the normal architecture of the liver (Laus Filho, 1947; South-Paul *et al*, 2010). The literature indicates a clinical test for icterycia, normal urine has a ST of 0.066 N/m, but if the urine contains bile (which occurs in cases of icterycia), the ST of the urine reduces to +/-0.055 N/m, in this test, sulfur powder spreads on the surface of the urine : The powder floats in normal urine, however, it sinks if the ST of the urine is diminished by the presence of bile, indicating the presence of IP (Laus Filho, 1947; Behring *et al*, 2004; South-Paul *et al*, 2010; De Medeiros *et al*, 2013).

## Conclusion

The intermolecular forces on the surface can be broken with increased substances that lower the surface tension, being released more bilirubin in the blood. The data collected show how the superficial tension is efficient in our daily life, and the relationship with the icterycia processes is important.

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