

**TITLE:** Evaluation of the agreement of the modified Hodge test with the presence of KPC and NDM enzymes in enterobacteria isolated from patient samples from a public hospital in Salvador, Bahia.

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**ABSTRACT:**

Carbapenemases are the  $\beta$ -lactamases of major clinical relevance in enterobacteria, due to their ample hydrolytic capacity against antibiotics. In the classification of Ambler, they are members of the molecular class A, B and D of  $\beta$ -lactamases, being more widespread the metallo- $\beta$ -lactamases (IMP, VIM and NDM), oxacarbapenemases (OXA-48), and *Klebsiella pneumoniae* carbapenemases (KPC). NDMs and KPCs are extremely relevant from the epidemiological point of view because of their rapid global spread due to the genetic context in which genes are inserted. The modified Hodge test (THM), proposed for carbapenemase detection, has good sensitivity for the detection of Ambler class A (KPC) and class D (OXA-48)  $\beta$ -lactamases, and low sensitivity for NDM producers. At present, it is not indicated as a screening for carbapenemase, but it is still important in measures to control the spread of these resistance in the hospital setting. The achievement of THM does not exclude the need for confirmation of resistance genes by molecular techniques. This work aimed to evaluate the agreement between the modified Hodge test and the presence of KPC and NDM enzymes. The concordance between THM and the presence of KPC and NDM enzymes of all carbapenem - resistant enterobacteria isolated from several samples of patients admitted to a Public Hospital of Salvador during the year 2016 was evaluated. During this period, 40 isolates of carbapenem-resistant enterobacteria from lower respiratory tract samples, blood, urine, secretions, tissues, organic liquids and surveillance cultures were detected. About 58% (23/40) of the isolates had the KPC enzyme confirmed by molecular test, while 32% (13/40) confirmed the presence of NDM. Among the isolates that had the KPC enzyme confirmed by molecular test 83% (19/23) presented positive Hodge test, while 17% (4/23) presented an indeterminate test. The negative predictive value for the Hodge test in the detection of the enzyme KPC was 100%, while the negative predictive value of the Hodge test in the detection of the NDM enzyme was around 50%. The observed results showed similarities with studies in the literature, corroborating the importance of the Hodge test, when positive, in the early detection of KPC and NDM type carbapenemases.

**Key words:** Enterobacteria, Carbapenemases, Hodge test.