Metronidazole Susceptibility and Extracellular Nucleotide Hydrolysis Profile of Trichomonas vaginalis Isolates

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Trichomonas vaginalis is a protozoan that causes trichomonosis, the most common STD in the world. Metronidazole is the drug of choice for the treatment of the infection. Extracellular nucleotides can be released by cells and extracellular ATP may act as a signaling compound in cytolytic mechanisms. The members of E- NTPDase family are able to hydrolyze ATP and ADP, while the ecto-5'-nucleotidase hydrolyzes AMP, producing adenosine, that can be reuptake by the parasite. The aims of this study were to evaluate the susceptibility of fresh clinical isolates of T. vaginalis to metronidazole and to determinate the extracellular nucleotide hydrolysis profile. The T. vaginalis fresh clinical isolates TV-LACH1, TV-LACH2, TV-LACM1, TV-LACM2, TV-LACM3, and TV-LACM6 and ATCC isolates 30236 and 30238 were used in this study. The in vitro metronidazole susceptibility assay was determined by serial dilution in microplates. The extracellular nucleotide hydrolysis (ATP, ADP, and AMP) was determined by release of inorganic phosphate (Pi) through colorimetric method. All isolates tested were susceptible to metronidazole, with minimum inhibitory concentration (MIC) in the range of 1.83 to 73 µM, except for TV-LACM2 isolate, with a MIC value of 580 µM. All isolates demonstrated nucleotide hydrolysis and linearity in the protein curves from 0.2 to 0.8 mg of protein, and in the time curves, from 10 to 60 minutes. Our results revealed the presence of a fresh clinical isolate metronidazole-resistant and suggest the involvement of ectonucleotidases as survival strategy of parasites, as well as an adenosine uptake mechanism.

Key Words: Ecto-5'-nucleotidase; Metronidazole; NTPDase; Trichomonas vaginalis.

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