PARTIAL PURIFICATION AND CHARACTERIZATION OF *TRICHOMONAS VAGINALIS* DNA TOPOISOMERASE II

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Abstract. DNA topoisomerases regulate conformational changes in DNA topology by catalyzing the breakage and rejoining of DNA strands during the cell cycle. These processes are essential for the multiplication of cells, and inhibition of these reactions stops cell division and cell growth. Drug resistance to *Trichomonas vaginalis*, a common sexually transmitted protozoan parasite, is increasing worldwide, and DNA topoisomerase II may provide a new target for anti-trichomonal drug development. In this study, *T. vaginalis* DNA topoisomerase II was partially purified from a large scale axenic culture using fast protein liquid chromatography with a yield of 0.16% and 17-fold purification. The partially purified enzyme was strictly dependent on ATP and Mg^{2+} with optimal concentration of 1 and 10 mM respectively for relaxation activity. *T. vaginalis* DNA topoisomerase II activity was inhibited by m-amsacrine (m-AMSA) and ofloxacin at minimum inhibitory concentration (MIC) of 250 μM. At this concentration, ciprofloxacin showed incomplete inhibition whereas metronidazole was inactive. DW6, a DNA quadruplex binder, was the most active compound with MIC of 62.5 μM, suggesting the potential for development of such compounds as selective anti-trichomonal drugs in the future.

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