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Aqueous Extract of Picrorrhiza kurroa Royle ex Benth: A Potent Inhibitor of Human Topoisomerases

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Abstract : Topoisomerase I and II α plays a crucial role in the DNA-maintenance in all living cells, and for this reason, inhibitors of this enzyme have been much studied. In this paper, we have described the inhibitory effect of the aqueous extract of Picrorrhiza kurroa on human topoisomerases by measuring the relaxation of superhelical plasmid pBR322 DNA. The aqueous extract inhibited topoisomerase I and II α in a concentration-dependent manner (Inhibitory concentration (IC) ≈ 25 and 50 µg, respectively). By stabilization studies of topoisomerase I-DNA complex and preincubation studies of topoisomerase I and II α with the extract; we conclude that the possible mechanism of inhibition is both; 1) stabilization of covalent complex of topo I-DNA complex and 2) direct inhibition of the enzyme topoisomerases. These findings might explain the antineoplastic activity of Picrorrhiza kurroa and encourage new studies to elucidate the usefulness of the extract as a potent antineoplastic agent.

Keywords : Picrorrhiza kurroa, topoisomerase I and II α, inhibition, antineoplastic agent
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