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In Vitro and *In Silico* Studies of Lunacridine from *Lunasia Amara* Blanco as Anticancer

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Lunasia amara Blanco is a famous plant in South Sulawesi. It was used largely by local people as antibacteria and aphrodisiac. Quinoline alkaloid lunacridine was known as the active principle from *Lunasia amara* Blanco. Its activity was reported as a DNA Intercalating Topoisomerase II inhibitor. In this study, we have isolated and assayed the cytotoxic activity of lunacridine on P388 murine leukemia cells by MTT colorimetric assay (*in vitro*). Lunacridine showed the less cytotoxic activity with the IC50 of 39.52 μg/mL. With the aim to explore the structural determinants responsible for this activity, molecular docking study have been carried out with DNA model using AutoDock 4.0 software with various total of energy evaluations (*in silico*). The best docking reached at the total energy evaluations of 2.5 × 107 with the binding free energy of -6.63 kcal/mol. Analysis of the docking results was in accordance with the ability of lunacridine to intercalate between base pairs of DNA. Cytotoxic activity of lunacridine is less probably due to low affinity and molecular interaction. Therefore this study suggests to design and to develop lunacridine as a lead compound for anticancer drug.

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