

A novel copper compound, CuNV110, induces apoptosis in tumor cells by dissociation of the Hsp60-pro-caspase 3 complex

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The biological activity of CuNV1110, a novel copper chemical compound, has been recently studied on cancer cells and it has been showed that it reduces the cell viability, in a dose and time dependent manner, and induces cell apoptosis. In this study we evaluated the possible mechanisms by which CuNV1110 induces cell apoptosis. In particular we looked at its effects on Hsp60 levels and caspase 3 activation. We used an in vitro model of a pulmonary mucoepidermoid carcinoma (NCI-H292 cells). We found that CuNV1110 reduces the cell viability and induces cell apoptosis in a dose/time dependent manner. Then, we found that Hsp60 levels decrease with the increasing concentrations of CuNV1110; by contrast, caspase 3 levels increased. Interestingly, we found by immunoprecipitation a complex between Hsp60 and pro-caspase 3 in untreated cells that dissociate with increasing doses of CuNV1110. These data demonstrate that CuNV1110 can dissociate the anti-apoptotic complex between Hsp60 and pro-caspase 3 in NCI-H292, in turn inducing apoptosis of tumor cells. If confirmed in other cell lines, CuNV1110 will be tested as anticancer drug by in vivo models.

Keywords

Respiratory cells, pulmonary cancer, Hsp60, caspase 3, apoptosis.