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Graphical Abstract

Several *N*-acyl colchicine analogues have been synthesized and their cytotoxicity, their effects on inhibition of tubulin polymerization and cell cycle have been evaluated. Moreover their capacity to downregulate some oncogenes at nontoxic dosis have been evaluated. The haloaroyl moiety enhances oncogene down-regulation effect as regards colchicine itself. Outstanding results for *m*-chlorobenzoylderivative **14** were obtained as this derivative is able to decrease the expression of oncogenes involved in tumor aggressiveness at concentrations in which there is no antimitotic effect.