

Int. J. Antimicro. Agents, 14, 203-207 (2000).

Synthesis and Biological Activity of *N*-Acylphenothiazines

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*Abstract.* Previous studies have demonstrated the relationship between radical intensity and cytotoxic activity in water-soluble compounds. This relationship was investigated in lipophilic compounds. Several *N*-acylphenothiazines showed higher cytotoxic activity against human leukemic and squamous carcinoma cell lines than phenothiazine, the parent compounds. Electron spin resonance (ESR) spectroscopy showed that these active compounds produced much lower amounts of radicals than phenothiazine. Several compounds failed to inhibit the cytopathic effects of human immunodeficiency virus (HIV) infection in MT-4 cells. It suggested that the radical-mediated mechanisms have not involved in the induction of cytotoxic activity by lipophilic compounds, such as *N*-acylphenothiazines.