Evaluation of phototoxic properties of antimicrobials used in topical preparations by a photohaemolysis test.

Abstract:
Antimicrobials are widely used in topical formulations as preservatives or as therapeutically active agents. Photosensitization by such compounds has not yet been studied systematically. To identify possible phototoxic properties, antimicrobials (benzyl alcohol, bronopol, chloracetamide, clioquinol, diazolidinyl urea, ethylenediamine dihydrochloride, formaldehyde, glutaraldehyde, imidazolidinyl urea, sodium benzoate, propylene glycol) were evaluated in vitro by means of a photohaemolysis test using suspensions of human erythrocytes. Irradiations were performed with UVA- and UVB-rich light sources. In the presence of bronopol or clioquinol, there was photohaemolysis up to 78.1% or 48.5% with UVA and up to 100% or 34.3% with UVB, respectively. The phototoxic effect depended on the concentration of the compounds and the UV doses administered. None of the other substances tested caused significant photohaemolysis. It is concluded that bronopol and clioquinol exert phototoxic effects in vitro and thus might also cause photosensitization when used on the skin. The clinical significance of this has to be established by further work.