

Experiments between various transition metal ions and artemisinin showed that Co^{2+} and Co^{3+} did not cause the degradation of artemisinin. Other metal ions reacted with artemisinin at different rates and caused many degraded products observed by silica TLC methods. Similar results were found with metal-hematoporphyrin complexes (MHPP) of various transition metals that only cobalt(II)- and cobalt(III)-hematoporphyrin did not cause the degradation of artemisinin. The reactions of MHPP and artemisinin were also monitored by the change of its UV-visible spectra upon addition of artemisinin. No changes in Co(II)-hematoporphyrin were observed in the presence of artemisinin. Although extensive efforts to prepare single co-crystals of CoHPP-artemisinin, no suitable crystals for X-ray diffraction analysis were obtained. In the X-ray crystallographic studies of artemisinin derivatives, three novel semi-synthetic compounds were crystallized and their structures were elucidated with good geometry and reliable R-factors. The structures of bis-artemisinin derivatives revealed an interesting conformation such that the endoperoxide group of each monomer was folded inside of the molecule and put the hydrophobic parts outwards.