

We have prepared a number of variously substituted precursors based on pyrazine-2,3-dicarbonitrile, phthalonitrile and quinoxaline-2,3-dicarbonitrile. These substances formed macrocycles and each of them was separated (if possible), purified and sufficiently characterized. In this way were prepared several series of products which were used to elucidate the influence of structural changes on physical and photodynamical properties. We found out that the zinc complexes of azaphthalocyanines which were substituted with bulky groups binding to the macrocycle core via heteroatom of sulphur were the best from the point of view of photodynamical properties. These substances were characterized by high production of singlet oxygen, sufficient photostability, maximum absorption at longer wavelength and poor aggregation which provides a high-quality incorporation into unilamellar liposomes. Based on aforementioned results we prepared photosensitisers containing one functional group which could be possibly used as the third generation photosensitisers. By the incorporation of four benzene cores into tetrapyrazinoporphyrazine macrocycle was the absorption maximum shifted to the range of app. 750 nm which is considered as optimal from the point of view of photodynamical effect in living tissues.