The dissertation has been divided into 9 chapters. Chapter 1 contains a theoretical introduction.

In subsection 1.1. describes the physical basics of MR imaging, diagnostic possibilities and contraindications to this method.

In subsection 1.2. describes in vitro PDT studies on kidney tissues, using examples of studies carried out in various laboratories by scientists.

The assumptions and goals of the doctoral dissertation are presented in Chapter 2.

Chapter 3 presents the methodology of the experiment: the method of preparing the histopathological material on the basis of which the tests were performed, the description of the MR examination procedure, and the course and mechanism of PDT.

Chapter 4 presents the results of the tests carried out for healthy kidney tissues and a tumor specimen from the diseased kidney (histopathological images), as well as the results of methods of selecting optimal TR and TE values for different contrasts, and thus the T_1 and T_2 times of healthy, neoplastic tissues. and tissues subjected to PDT therapy after the application of a specific photosensitizer (histopathological images and measurement tables of relaxation times).

In Chapter 5, the interpretation of the results obtained from the conducted research is given.

Conclusions from the conducted research are collected in Chapter 6.

In the final chapters, i.e. in chapters 7, 8 and 9, you will find: a bibliography, a summary (in Polish and English) and a list of tables and figures.

Finally, in the attachments, a scan of the consent of the Bioethics Committee of the University of Rzeszów and a list of scientific achievements obtained over the last three years during the preparation of the doctoral dissertation have been added.

Work in accordance with the Resolution No. 8/11/2018 of the Bioethics Committee at the University of Rzeszów of 08/11/2018, "Evaluation of the effectiveness of *in vitro* diagnostic photodynamic therapy in kidney cancer in correlation with the histopathological picture and the times of MRI reactions".