Summary

Although a significant progress has been made in searching of modern drugs, societies still struggle with health problems. Therefore, amongst many activities directed towards health promotion, still novel drug candidates and privileged structures with broad range of bioactivity are highly required. Therefore, in order to create a versatile library of potentially bioactive compounds, new synthetic methods should be developed. This project fits into the contemporary strategies, which are applied in drug discovery and enabled the synthesis of structurally different molecules from one parent compound. Such approach enhances the chance of finding new active compounds. Because the piperidine ring is responsible for biological activity of some drugs and is a core ring of naturally occurring alkaloids, the main goal of the project is the preparation of novel compounds similar to the skeletons of some piperidine alkaloids, as: Morphine (Benzomorphans), Haouamine, Halichlorine, Cylindricine, Cevanine, Emetine or Camptothecine. In order to obtain the alkaloid-like compounds will be elaborated novel synthetic procedures enabling a cyclization of functional moieties, introduced into 2-(thio)pyridone ring. For construction of the polycyclic alkaloid-like systems, ring-closing metathesis involving the alkenyl groups and carbocyclization applying a benzyl moiety will be applied. A positive verification of the project concept will stimulate a further prospect and development in both areas: in the development of synthetic methods for construction of novel alkaloid-like compounds and in drug discovery.