**Results** The work presented aimed to develop novel liposomal formulations of berberine and imiquimod which were examined for their efficacy in combination against colorectal cancer cell lines. Liposomal formulations of both compounds were successfully prepared using active loading method with different pH generating agents. All loading methods showed desired characteristics in terms of mean size and polydispersity. The encapsulation efficiency was higher than 95% for almost all used formulations. The *in vitro* study proved cytotoxicity of berberine loaded liposomal formulations on tested colon cancer cell lines. The results of the immunofluorescence staining indicated that the both compounds triggered calreticulin on the cell surface (colon cancer or macrophages).

**Conclusions** The combination of both substances in the liposomal form may generate a synergistic effect on phagocytosis of colon cancer cells.

**REFERENCES**


**Background** Colorectal cancer is the third most commonly diagnosed malignant tumor, taking fourth place in terms of cause of cancer deaths worldwide. Unfortunately, the ability of the immune system to distinguish its own from foreign cells is often limited. One of the overexpressed receptors is receptor CD47 - widely distributed glycoprotein on the cell surface of various kind of tumors. It plays a role as ‘don’t eat me’ signal by binding with receptor SIRPα, presents on the cell surface of macrophages. Calreticulin, protein occurring on the surface of tumor cells and phagocytes, acts as protein with pro-phagocytic properties. Several natural bioactive substances are predicted to induce immunogenic cell death by translocation calreticulin on the surface of cancer cells which significantly increases the efficiency of their phagocytosis. Moreover, one of the well-known TLR-7 receptor agonists - imiquimod, is involved in phosphorylation of Bruton’s tyrosine kinase leading to the appearance of calreticulin on the surface of macrophages, which increases the efficiency of phagocytosis of tumor cells.

**Material and Methods** Liposomes were prepared by the thin-film hydration method followed by extrusion. Human colon cancer cell line (LS180) and human monocytic cell line (THP-1) were used for experiments. Calreticulin was detected by using confocal microscopy.