Cytotoxicity and lipophilicity of ruthenium(II) polypyridyl complexes as anti-cancer drugs

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The anti-cancer drugs based on the other metals than platinum have been attracting much attention, because the platinum-based drugs such as cisplatin show the heavy side effects and/or the drug resistance of tumor cells. Especially, the cytotoxicity of the ruthenium complexes have been actively reserched.[1] These complexes show the effects of the photo-dynamic theray (PDT) and the photo-activated chemotherapy (PACT) when they are irradiated.

We have systematically synthesized [Ru(*p*-Cym)(**L**)]+ and [Ru(**L1**)$_2$(**L2**)]$^{2+}$-type complexes with various 2,2'-bipyridine and 1,10-phenanthroline derivatives (Fig. 1). We have found that some of the ruthenium complexes show the strong cytotoxicity for tumor cells such as A549 and MDAMB231.[2] We have estimated the hydrophobicity by using reverse-phase HPLC, and discuss the relationship between the cytotoxicity and the hydrophobisity.

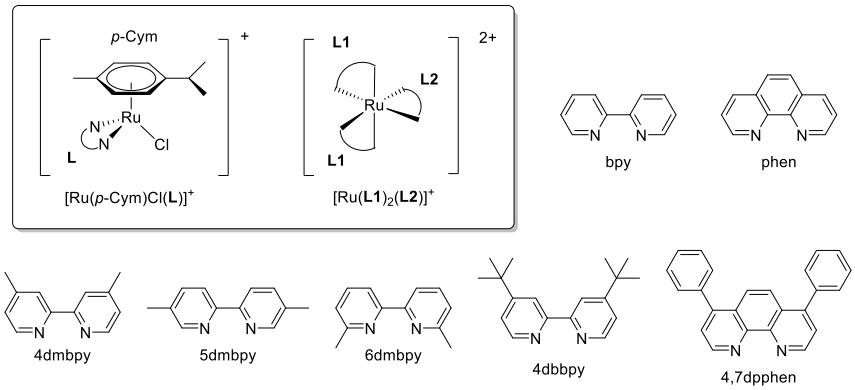

Figure 1. Ruthenium complexes synthesized in this work.

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[1] Bashir, M.; Yousuf, I. *et al*., *Coord. Chem. Rev.*, **2023**, *487*, 215169.
[2] Ishida, H.; Hara, M.; Hirata, Y. *Jpn Pat. Appl.*, 2023-086639.

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