



FACULTY OF
BIOSCIENCE &
BIOINDUSTRY
TOKUSHIMA UNIVERSITY

発育鶏卵を用いた創薬研究

[キーワード: 発育鶏卵, 抗癌剤, 抗酸化剤] 教授 宇都 義浩

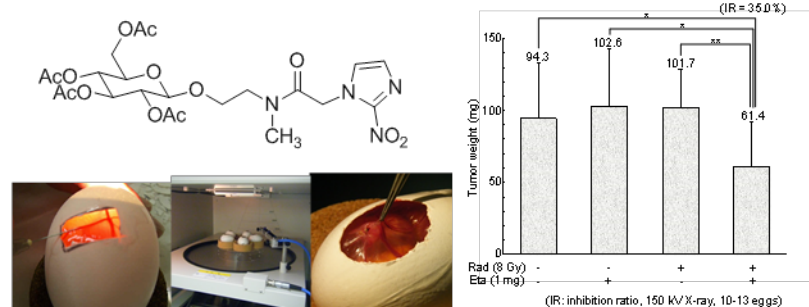


図1 放射線増感剤TX2244の放射線増感活性の評価

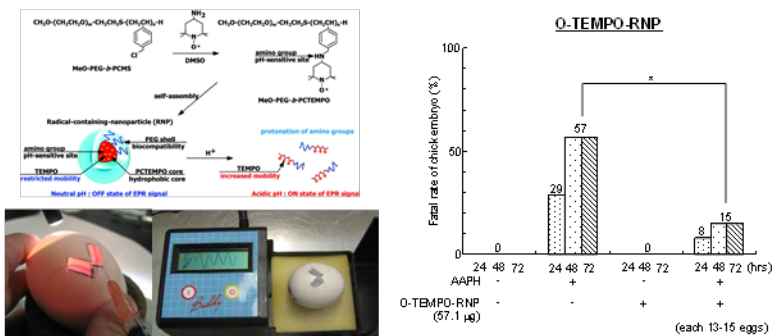


図2 レドックスナノ粒子の抗酸化活性の評価

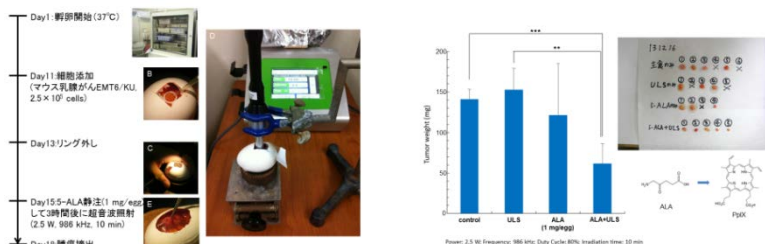


図3 超音波増感剤ALAの超音波増感活性の評価

内容:

創薬研究にとってマウスやラットを用いた動物実験は不可欠ですが、倫理的問題のためにその使用が制限されてきています。近年、ゼブラフィッシュが代替実験動物として開発されていますが、比較的高い脂溶性をもつ薬剤しか吸収されず、吸収量もコントロールし難いといった問題点があり、他の実験動物の開発が強く求められています。

そこで我々は、発育鶏卵を用いた薬剤評価法を開発することを試んでいます。発育鶏卵とは、マウスやラットと比較して、安価で、飼育が容易であり、個体差が小さく、アレルギー性が低く、特別な実験施設が不要といった多くの利点を有する次世代の実験動物です。これまでに、この発育鶏卵を用いて我々が分子設計・合成した放射線増感剤/防護剤、血管新生阻害剤、抗転移剤、超音波増感剤、抗酸化剤の薬物動態解析や活性評価に成功しています。

分野: 創薬化学

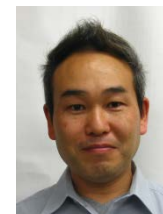
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Medicinal Chemistry Based on Developing Chicken Egg

Professor Yoshihiro Uto

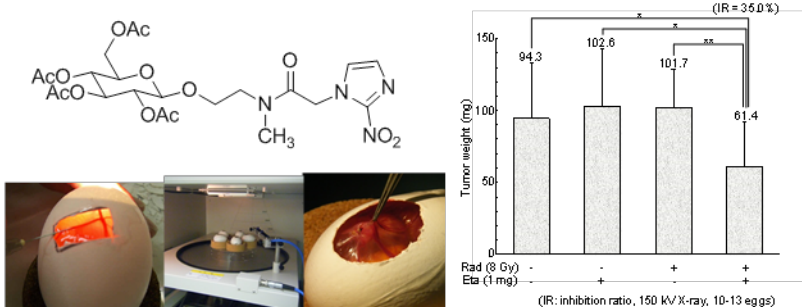


Fig. 1 Evaluation of radiosensitizing activity of TX2244

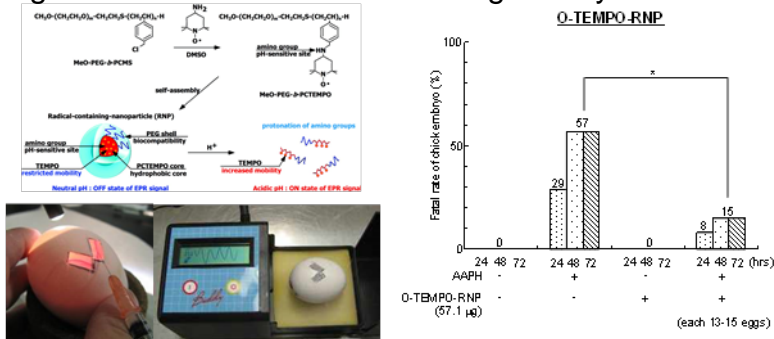


Fig. 2 Evaluation of antioxidative activity of redox nanoparticle

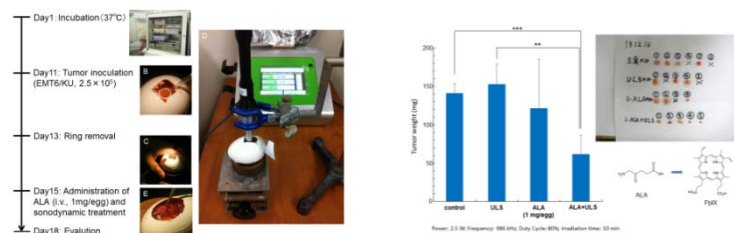


Fig. 3 Evaluation of sonosensitizing activity of 5-ALA

Content:

Although the animal experiments which used the mouse and the rat is indispensable to drug discovery, the use has been restricted for an ethical problem. The zebra fish is developed as alternative experimental animal in recent years. However, only a drug with comparatively high lipophilicity is absorbed and hard to control the amount of absorption using zebra fish. Therefore, development of other experimental animals is strongly required.

Then, we have tried to develop the drug evaluation method which used the developing chicken egg. The developing chicken eggs are the next-generation experimental animal which has many advantages that it is cheap, controllable only at temperature and humidity, individual specificity is small, allergic nature is low, and a special experimental institution is unnecessary. Until now, we have succeeded in the pharmacokinetic analysis and evaluation of biological activity of our designed radiosensitizer / radioprotector, an antiangiogenic / antimetastatic agent, a sonosensitizer, and an antioxidant using the developing chicken egg.

Keywords : developing chicken egg, radiosensitizer/ radioprotector, antiangiogenic/antimetastatic agent, sonosensitizer, antioxidant

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