

Evaluation of an *in-vivo* bioassay system for microtubule inhibitors with antitumor activity using the heliozoon *Actinophrys sol*

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SUMMARY

Screening of microtubule-affecting drugs with anti-tumor activity usually employs the purified tubulin and its polymerization–depolymerization assay *in vitro*. Results presented herein show that the heliozoon *Actinophrys sol*, having long and thin tentacles called axopodia including bundles of microtubules, is applicable to an *in-vivo* bioassay system to monitor the effects of microtubule inhibitors. In the presence of colchicine as a microtubule depolymerizing agent, the axopodial length of the heliozoon was shortened in a concentration-dependent manner. Pre-treatment of *A. sol* with paclitaxel (Taxol[®]) as a microtubule-stabilizing agent prevented axopodial degradation induced by cold treatment. These observations indicate that *A. sol* is useful as an effective *in-vivo* tool to monitor the effects of microtubule-affecting agents with anti-tumor activity. Additional studies must be undertaken to examine the response of *A. sol* to various synthetic compounds targeting tubulin/microtubule systems.

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