Chorioallantoic membrane assays have been based on diffusion control—Problems arising with a diversity of mass transfers in egg white

陳冠州

Hsieh CL;Peng CC;Lin LY;Cheng YT;Chen KC;Peng RY

摘要

Abstract

The chorioallantoic membrane (CAM) assays have been intensively used to determine angiogenesis and anti-angiogenesis of medicines. In view of bioactivity, this technique should be performed with kinetic control regime in chicken embryos. Whether the dosages ever used had satisfied this requirement, we explored by mathematical analysis. A diffusion-in-egg model was established to describe several medicinal diffusions in egg white that involved the instantaneous transient kinetic behavior, the diffusion of medicines in capping volume (the volume from the air sac to the interface of egg yolk). By reviewing the diffusion of various compounds including the cited and the experimentals in this work, we conclude that all the CAM assays ever cited were performed under diffusion control regime rather than kinetic control, which may bring forth deviations caused by a diversity of constitutes in egg white through various medicine-protein interactions.