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Effects of cycloheximide or 6-dimethyl aminopurine on the parthenogenetic activation of pig oocytes using pulsatile treatment with nitric oxide donor

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[fulltext]

Pig oocytes matured *in vitro* were parthenogenetically activated using nitric oxide donor SNAP (2mM). Continuous treatment successfully activated the oocytes only after more than 12 hours of

exposure. Pulsatile treatments during which oocytes were repeatedly exposed to 2mM SNAP for a short time (10, 20 or 30 minutes) were more efficient with regard to the activation rate, even when the total exposure time did not exceed 4 hours. Parthenogenetic development was very limited after continuous treatment with 2mM SNAP. A significantly higher proportion of developing parthenogenetic embryos was observed after the pulsatile treatment (development to the morula stage 0 vs. 18%; development to the blastocyst 0 vs. 7%; $P < 0.05$). However, this developmental rate was significantly lower ($P < 0.05$) than the development induced by conventional activation treatment with calcium ionophore (development to the morula stage, 23%; development to the blastocyst stage, 18%). When we combined pulsatile SNAP-treatment with the effect of protein kinase inhibitor 6-dimethyl aminopurine (6-DMAP) (2mM 6-DMAP for 2 hours) or with the inhibitor of protein synthesis cycloheximide (CHX) (10 µM CHX for 2 hours), we observed a significant increase ($P < 0.05$) in the activation rate when compared to the respective

DMAP or CHX (63 vs. 78% of activated oocytes for 6-DMAP; 63 vs. 83% of activated oocytes for CHX). However, the development of parthenogenetic embryos was not enhanced when the pulsatile SNAP-treatment was combined with 6-DMAP or with CHX.

Keywords:
activation; nitric oxide; oocyte; pig

[fulltext]