RELATION BETWEEN GSK3 AND SERCA IN TICK EMBRYONIC CELL LINE BME26

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The enzyme glycogen synthase kinase 3 (GSK3) plays an important roles in protein synthesis, glucose metabolism, cell proliferation and differentiation, microtubule dynamics, cell motility, and apoptosis through phosphorylation of many substrates. Therefore, its activity must be tightly regulated, which is achieved by several mechanisms including phosphorylation, protein complex formation and subcellular distribution. Any change in this multifunctioning protein can promote phenotypes such as altered formation or impairment of embryo development. Our group has characterized the GSK3 during embryogenesis of *R. microplus*. The RNA interference was used to analyze role of GSK3 during ovary formation and embryogenesis in partially engorged female ticks and this silencing affected both oviposition and hatching. Recent reports suggest that GSK3 activity is modulated by calcium homeostasis. More recently GSK3 activity was detected in embryonic cells (BME26) lysates and inhibited when EGTA was present. This result suggests a relation between Ca^{2+} levels concentration and GSK3 activity. Low calcium concentration in cytosol is maintained by coordinated function of transporters and channels including Ca^{2+}-ATPases (SERCA). SERCA was immunodetected in tick eggs and BME26 cells using western blotting. SERCA expression was altering when GSK3 was silencing and inhibited in BME26 cells. We found that SERCA expression in BME26 cells was altered when GSK3 was silenced and inhibited. These data suggest a link between GSK3 activity, Ca^{2+} concentration and SERCA expression and provide evidence for a crucial role of GSK3 in tick development.

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