Increased hatching success of cracking eggs of broad-snouted caiman (*Caiman latirostris*) through a new incubation method

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Abstract: The shell of crocodilian eggs is highly fragile during the firsts days of development making them prone to cracking during the eggs laving or collecting and the embryos usually dead. There are many studies about different techniques for egg artificial incubation and how to increase the hatching success with problems in the eggshell, but as far we know, there are not precedents in crocodilians. For this reason, the objective of this research was to evaluate the hatching and survival success of cracked eggs of Caiman latirostris, using "windowing" incubation method (adapted for crocodilians) and the ex - ovo incubation of embryos in artificial culture vessels. We used fertile eggs with cracked shell [windowing method (WMT) and ex ovo (EOT) treatments] and non-cracked eggshell (control treatment). All eggs were cleaned with alcohol to avoid contamination during incubation time. In the WMT, a portion of eggshell was removed, whereas for the EOT, the caiman embryos were separated from the eggs. Every treatment was incubated in an artificial culture vessel with an aqueous antimicrobial solution of 0.01% benzalkonium chloride at 31 ± 1 °C. Also, others incubation conditions such as calcium, water supplementation and gas exchange were controlled. After a maximum of 38 days of incubation, the hatching success for WMT was 66.67%, for EOT 0% and controls 100%. The posterior survival of hatchlings of WMT was 50% and control 100%. The results indicated that the incubation in artificial culture vessels increased the viability and hatching success of cracked eggs, working as an apparently antimicrobial barrier and helped to maintain sterile conditions and do not interfere with embryonic development. In addition, provide a unique accessibility of monitoring for developmental studies or other manipulations to the crocodilian embryos. However, the EOT is not recommended, because fails to recreate the conditions into the egg.

Keywords: Artificial culture vessel, Cracked eggshell, Crocodilians, Egg survival

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