

## YOLK CONSUMPTION OF TAMBAQUI *Colossoma macropomum* LARVAE UNDER DIFFERENT TEMPERATURES<sup>1</sup>

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The yolk is the endogenous essential nutritional reserve for the development of embryos and newly-hatched larvae, characterized mainly by glyco-phospho-lipoproteins called vitellogenin, composed predominantly by lipovitin and phosphovitin. The embryogenesis of tambaqui larvae is dependent on the use of the proteins contained in the yolk to ensure the supply of amino acids and other nutrients required for growth and development of the organism. Environmental factors, however, affect the organic metabolism and can cause physiological changes. Temperature is one of the most studied environmental variables for fish development, because it can affect the homeostasis, enzyme activity and control the development of body structures. Therefore, this study aimed to evaluate the influence of water temperature on the yolk consumption of tambaqui *Colossoma macropomum* larvae.

Fertilized eggs were incubated in three different temperatures (25, 28 and 31° C) and sampled daily (n = 30 per treatment) until complete yolk absorption. The yolk sac area (YSA) was evaluated using measurement of total area (µm<sup>2</sup>) instead of the volume, as a direct measurement. The yolk images were obtained using the SZX7 OLYMPUS stereoscope and the images were analyzed with the software cellSens Standard 1.8 OLYMPUS, with which a closed polygon was drawn to obtain the yolk sac area. Data were *ln* transformed and analyzed as the minimum, 1<sup>st</sup> quartile, the 3<sup>rd</sup> quartile and maximum average value using non-parametric ANOVA followed by Dunn's multiple comparison test. The mean and standard deviation of yolk sac area and the standard length are described in Table 1.

No statistical differences were found for the yolk area in the different sampling days and the yolk sac was consumed when the animals exceeded  $9.56 \pm 1.31$  mm, which happened at the 4<sup>th</sup> day post hatching (dph) in 31° C and at the 5<sup>th</sup> dph in 25 and 28° C. Despite of the lack of statistical differences, these results indicate that the metabolism of tambaqui larvae is highly dependent of water temperature. Considering the high survival rate at the end of the lecithotrophic period (above 89,8%), our results also indicate that temperature range between 25 and 31° C can be used in tambaqui hatcheries, but that exogenous feeding should be anticipated to the 4<sup>th</sup> dph when the environmental temperature is around 31° C, or delayed to the 5<sup>th</sup> dph if larvae are under 25° to 28° C.

**Table 1. Changes in yolk sac area (YSA) and standard length (SL) of tambaqui larvae reared in different water temperatures**

	Initial		1DPH		2DPH		3DPH		4DPH		5DPH	
	YSA (µm <sup>2</sup> )	SL (mm)	YSA (µm <sup>2</sup> )	SL (mm)	YSA (µm <sup>2</sup> )	SL (mm)	YSA (µm <sup>2</sup> )	SL (mm)	YSA (µm <sup>2</sup> )	SL (mm)	YSA (µm <sup>2</sup> )	SL (mm)
<b>25° C</b>	881.4 ± 4.4	4.3 ± 0.1	852.4 ± 13.5	4.9 ± 0.3	385.1 ± 2.7	5.5 ± 0.6	79.6 ± 1.1	6.0 ± 0.9	50.7 ± 0.3	6.9 ± 0.4	0	9.5 ± 0.5
<b>28° C</b>	812.3 ± 30.3	4.1 ± 0.1	833.3 ± 6.3	5.0 ± 0.2	343.4 ± 4.8	5.8 ± 0.6	46.8 ± 3.8	6.7 ± 0.6	21.6 ± 0.2	8.2 ± 0.8	0	9.9 ± 0.8
<b>31° C</b>	833.9 ± 34.2	4.1 ± 0.1	810.1 ± 5.1	5.1 ± 0.4	304.8 ± 5.7	6.0 ± 0.3	31.7 ± 0.4	7.1 ± 0.4	0	9.7 ± 0.6	0	10.8 ± 0.6

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