Use of dopamine antagonists to improve tilapia reproduction indices

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Abstract:

One of the problems and challenges in breeding centers of Nile tilapia (*Oreochromis niloticus*) is the low fecundity and asynchronous spawning of females. In this study, the stimulatory effect of a LHRH analogue in combination with two dopamine antagonists called Olanzapine and Clozapine was investigated on ovulation induction of female Nile tilapia and compared with domperidone. 180 premature female tilapia were devided into 10 treatments and were kept in 3000 litre fiberglass tanks. The fish were intraperitoneally injected and reproductive indices (Ovulation Success, Latency period, Fertilization Success, Ovulation index, Mortality of broodstocks, Oocyte diameter, GSI, HSI) were measured.

The results showed that the reproductive efficiency of tilapia improved in the qualitative and quantitative indices studied due to dopamine antagonists, which in many reproductive indices had a significant difference with individual LHRH treatment ($p \leq 0.05$). Considering results of the experimental treatments, the presence of dopaminergic inhibition in Nile tilapia is clearly proven. Acceleration and synchronization of spawning were also well observed in treatments receiving dopamine antagonists, although the results varied depending on the type and dose of the drug. Also comparing the treatment of Damperidone treatment with the third-generation antagonists, it is clear that olanzapine and clozapine, as third-generation antagonists that specifically blocks some types of dopamine receptors, is more effective than Damperidone that involves all receptors. Also, compared to the two antagonists of olanzapine and clozapine, the treatments receiving olanzapine had better results.

Keywords: Dopamine, tilapia, reproduction