Decision-making in Zebrafish (*Danio rerio*) : A study on fish cognition

Ethophilia RESEARCH FOUNDATION

Upama Das[1], Chayan Munshi*

[1]Ethophilia Research Foundation, Santiniketan, 731235, India

INTRODUCTION & AIM

Locomotion is a very important behaviour exhibited by animals for foraging, survival, escaping from predators, etc. The locomotory behaviour of zebrafish is extensively used as a reliable behavioural marker in the area of ecotoxicological, pharmacological, and neurotoxicological research. In our study we have chosen zebrafish as a model organism because they show robust locomotory behaviour and high sensitivity to any external stimuli. The aim of our research is to study the decision-making ability of adult zebrafish from the perspective of foraging.

Five adult zebrafishes are chosen each day

One fish is introduced in the common zone each time and food is kept at the end of the path.

Observe that how fast they can recognize the food and reach the food using the simplest pathway.

METHOD

Fig.1 Fish trajectories in unperturbed environment

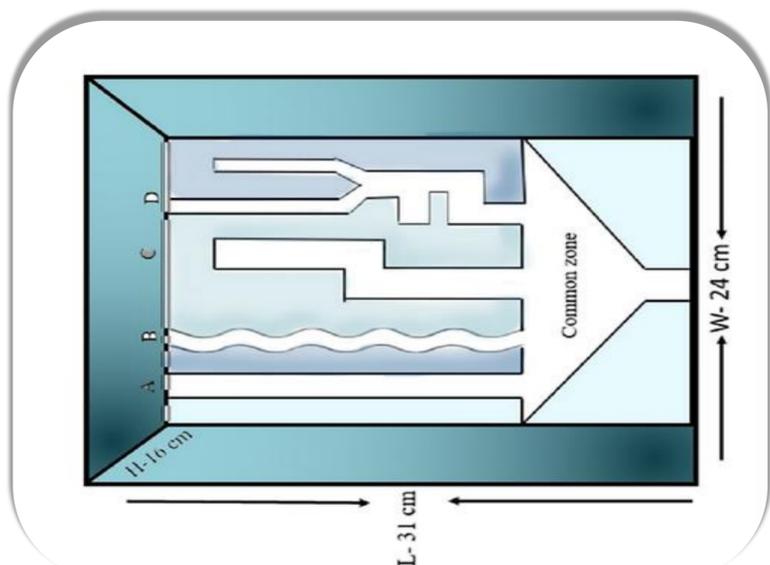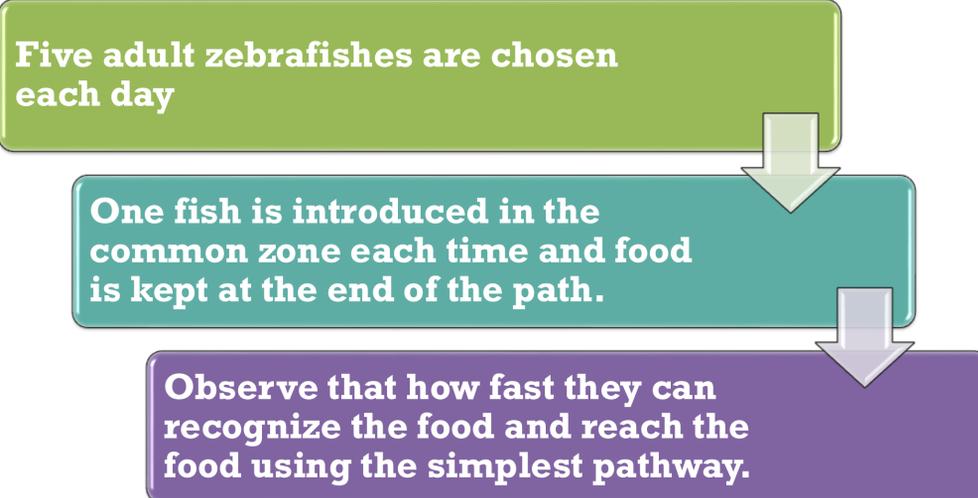

Fig.2 Fish trajectories in perturbed environment

Fig.3 Experimental model system

Observation for 10 min
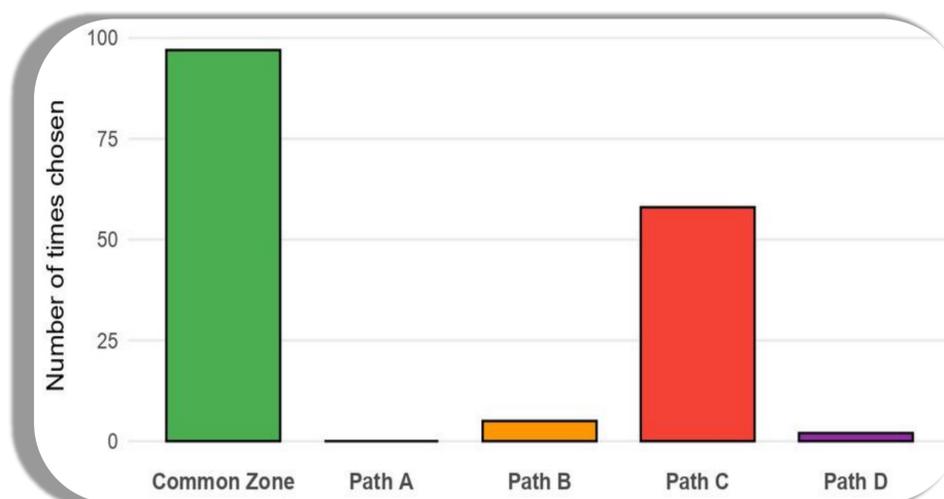
Room temperature

RESULTS & DISCUSSION

Fig.4 Number of times a certain type of path is chosen

Our findings show that the majority of fishes choose the Path C to reach the food source, despite the route being obstructed. This observation suggests that the fishes preferentially chose Path C because it represents the most direct and accessible route to the food source, and its comparatively greater width may facilitate easier navigation relative to the other available paths.

CONCLUSION

Adult zebrafishes demonstrated a preference for the most direct and simple route to the food source, even when the path was obstructed. This suggests that fishes prefer uncomplicated locomotory trajectories.

FUTURE WORK / REFERENCES

In future we are interested in studying the effects of microplastics and various toxicants (like heavy metals) on their decision-making ability.