

SEXUAL STATE CHANGES IN A PROTANDRIC HERMAPHRODITE, AMPHIPRION FRENATUS
BREVOORT (TELEOSTEI, POMACENTRIDAE) : ULTRASTRUCTURAL ASPECTS.

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Introduction

Amphiprion frenatus is an anemonefish, protandric hermaphrodite (Moyer & Nakazono, 1978). Functional males and females are living together as pairs in which the female (α -position) dominates the male (β -position). In the social hierarchy sub-adults and juveniles occupy the γ -position. Gonads of males are ovotestes in which testicular and ovarian areas are contiguous (Bruslé-Sicard & Reinboth, 1990) and those of females are pure ovaries. Gonadal modifications related to the influence of social relations were investigated using light and electron microscopic data.

Results and Discussion

Sex inversion (σ^{α} \rightarrow ϕ) is characterized by a degeneration both of male germ cells and their associated Sertoli cells and by an increase of oogenetic activity (mitotic oogonia, meiotic oocytes, beginning of auxocytosis of oocytes). Among female germ cells, primordial germ cells (PGCs) exhibiting features of undifferentiated cells (high nucleus to cell ratio, abundance in ribosomes, scarcity of membrane organelles) were identified. Their participation in building up the ovary is suggested.

It is possible experimentally to early induce juveniles (γ) to a male (β) or a female (α) orientation. In these two types of induced gonadogeneses, besides mitotic spermatogonia or oogonia and meiotic spermatocytes or oocytes, very numerous PGCs were observed and their bipotentiality revealed.

It is suggested that any change of sexual state (male- β \rightarrow female- α ; juvenile- γ \rightarrow male- β ; juvenile- γ \rightarrow female- α) makes a heavy demand on the gonad's germ potentialities since not only gonia but also PGCs participate in the transformation.

References

- Moyer, J.T. & A. Nakazono, 1978. Protandrous hermaphroditism in six species in the anemonefish Amphiprion in Japan. *Jap. J. Ichthyol.* 25 : 101-106.
- Bruslé-Sicard, S. & R. Reinboth, 1990. Protandric hermaphrodite peculiarities in Amphiprion frenatus Brevoort (Teleostei, Pomacentridae). *J. Fish Biol.* 36 : 383-390.