

Original article

Fatty acid requirement of a jellyfish *Aurelia aurita* s.l.

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Introduction

Marine finfishes and crustaceans require highly unsaturated fatty acids (HUFAs) of the n-3 series such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) for normal growth and survival [1,2]. In this research, we focused on jellyfishes which are recently prevailing and being raised as a popular aquarium animal. Jellyfishes generally take *Artemia* nauplii in captive condition. But usually *Artemia* nauplii don't contain much n-3 HUFA [3]. Therefore it's necessary to investigate the effect of deficient n-3 HUFA on jellyfish. *Aurelia aurita* s.l. is a common species in Japan and is easy to be reared. We carried out a series of experiments to examine its fatty acid requirement in laboratory.

Materials and methods

Ephyrae of *A. aurita* were obtained and isolated from a stock culture of polyps. After releasing ephyrae it took about a month to reach to young stage of *A. aurita* in laboratory reared condition. Water temperature and salinity were set at 24°C, 34 or 29, respectively. Half of the water change every day and total water once a week interval. *Artemia* nauplii were nutritionally fortified by direct method using test oils containing different fatty acids and given to ephyrae every day [4]. The change in bell diameter of test animal was measured under a stereomicroscope. The enriched *Artemia* nauplii were analyzed using a gas chromatography after the completion of rearing experiment.

Results and discussion

As results, DHA promoted growth of *A. aurita*, but linoleic acid and α -linoenic acid didn't affect to the growth (Fig. 1A). Also *Artemia* nauplii enriched by the oil containing EPA/DHA = 1 showed better growth than that of sole use of DHA group (Fig. 1B). As for survival, high rates were always noted in all treatments irrespective to fatty acids compositions.

These experimental results suggest that the fatty acids requirement of *A. aurita* is similar to that of ordinary marine fishes than freshwater fishes and they require n-3 HUFAs as essential fatty acids. Without the presence of n-3 HUFA, *A. aurita* can survive for at least 1 month from released. This experiment showed that there needs an appropriate amount or proportion of HUFAs for the healthy growth of *A. aurita*.

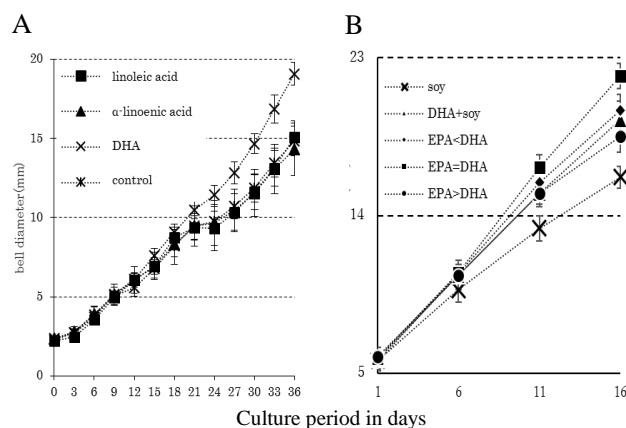


Fig. 1. Growth of *A. aurita* fed with *Artemia* nauplii with different fatty acids.

References

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