

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF FORMALIN
TREATMENT ON THE PRESENCE
OF ECTOPARASITES AND
SURVIVAL OF ASIAN SEA BASS
(*Lates calcarifer*) FINGERLINGS**

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ABSTRACT

The Asian sea bass (*Lates calcarifer*) or locally called ‘Siakap’ is an economically important finfish in South East Asia including Malaysia. Fingerlings are produced by commercial hatcheries and the culture of the sea bass however is hampered by disease occurrences. The disease of the Asian sea bass is widely studied, relatively little information is available on the treatment using long-term formalin bath in 24 hours. Therefore, the present study was carried out to investigate the effectiveness of different formalin concentrations for the treatment of ectoparasites in Asian sea bass fingerlings. The survival of fingerlings, the levels of pH and dissolved oxygen were also evaluated. The formalin concentrations used in this study were 10 ppm, 20 ppm, 30 ppm and 40 ppm with control at 0 ppm. Three size groups were established: two, three and four-inch fingerlings and were treated by immersing them in formalin bath for 24 hours. The sea bass fingerlings treated were infected by *Cryptocaryon irritans*, *Trichodina* sp., unidentified ciliates and monogenea. The results revealed the effectiveness of the 30 ppm formalin bath to eliminate *Trichodina* sp., monogenea and unidentified ciliates. However, formalin bath was found ineffective to eliminate *Cryptocaryon irritans* regardless formalin concentrations. There was no significant difference (Kruskal-Wallis test, $p < 0.05$) in the survival of fingerlings during the treatment (survival between 93.33% and 100%). Results showed 100% survival except for the three and four-inch groups treated in 40 ppm formalin bath, indicating the tolerance of the fingerlings to formalin concentrations during the treatment. There was a strong correlation between survival of four-inch sea bass fingerlings and the pH levels (Pearson’s correlation, $r^2 = 0.953$).

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

1.1.1 Introduction To Aquaculture

Aquaculture is the production of fish and shellfish for market under controlled or semi-controlled conditions (Paul and Joseph, 1993) or also known as aquafarming (Bagarinao and Primavera, 2005). Aquaculture is the cultivation and harvest of aquatic organisms. Finfish and shellfish are commonly grown, but other aquatic organisms are also cultured for example seaweeds microalgae, turtles and rare species (Buttner, 2011).

Aquaculture is needed to convene the food demands of growing global populations through diminishing natural fisheries stocks (Buttner, 2011). It is very important in the Asia-Pacific region with over 40 marine fish species that are commonly cultured, including groupers (*Epinephelus* sp.), snappers (*Lutjanus* sp.), the Asian sea bass (*Lates calcarifer*) and the golden pompano (*Trachinotus blochii*) (Leong et al., 2006).

According to Leong (1997), in the early 1970's, the culture of marine finfish in floating net cages in South East Asia was established particularly in Malaysia. The strong demand for, and the high price of live marine fish cause this new industry to develop rapidly. In the seventies and eighties, it has developed to a large extent due to the successful technical development of hatchery-produced sea bass fry in Thailand (Leong, 1997).

The Asian sea bass is one of the prominent species being cultured in South-East Asian countries, China and Australia (Kandan, 2009). They can live and grow in different culture environments either in fresh, brackish or marine water. Normally these fish are reared in ponds and cages (Kumaran et al., 2010). Sea bass fingerlings are well known to be very tolerant to changes in temperature and salinity of their environment (Josef et al., 1998). In many Southeast Asia countries, sea bass have been