CHAPTER I

INTRODUCTION & AIM OF THE WORK

INTRODUCTION

Limpets are various gastropod snails having a simple, flattened, conical univalve shell and derived from the body whorl of the ancestral coiled shell **(Barnes, 1980; Barth & Broshears, 1982; Haszprunar, 1988a and McLean, 1988)**. The shell like a Chinese hat or a shield which covers completely the limpet's body and has bilateral symmetry in most species, its size is variable according to the species and environmental conditions.

Some people use limpet as a diet although **Carrillo *et al.* (1991)** mentioned that, allergic activity was found with a cooked limpet extract. He suggested that, the offending antigen(s) may have been released by cooking and some people are hypersensitive to limpet antigen.

Beside using limpets as a diet and their shells for jewelry, keyhole limpet hemocyanin (KLH) has been intensively used for many years as an immune stimulant and hapten carrier in both research and clinics. Moreover, it is a promising tumor vaccine carrier, also it has been described as a reliable tool for serological diagnosis of acute schistosomiasis **(Markl *et al.*, 1991; Pollock *et al.*, 1991; Bushara *et al.*, 1993; Xue *et al.*, 1993; Li *et al.*, 1994; Modha *et al.*, 1994; Verweij *et al.*, 1995; Wishahi *et al.*, 1995; Xu *et al.*, 1995; Thors & Linder, 1998; Hamilton *et al.*, 1999; Markl *et al.*, 2001 and Kantelhardt *et al.*, 2002).**

Limpets are found in great numbers on the intertidal rocks throughout the world **(Sharabati, 1984 and Hill & Hawkins, 1991)**. They are characterized by homing in which each limpet makes its home by

rubbing a shallow hole into a rock with its hard shell and acidic secretions (pedal mucus). The hole is called a "home scar", which cover some rocks by thousands (**Cook *et al.*, 1969; Barnes, 1980; Hirano & Inaba, 1980 and Branch, 1981**). The limpet fits in its scar so well that it is protected from rainfall, drying out during low tide, the sun's radiation and even strong water currents. Limpets are commonly found on wave-swept rocky shores, where they may be subjected to water velocities. These extreme flows can impose large forces challenging the animals ability to adhere to the substratum. The conical shape of limpet shell has evolved in part to reduce these hydrodynamic forces while providing a large aperture for adhesion (**Denny, 2000**). During feeding or mating the limpet may travel up to one meter from its home spot. The technique it uses to find its way home is not fully known. Some researches indicate that, it travels in a "U" shaped path, and as it nears its home spot it can recognize it (**Hartnoll & Wright, 1977 and Hirano & Inaba, 1980**).

Patellidae, Acmaeidae, Lepetidae and Fissurellidae shed both eggs and sperms into the water so fertilization is external while internal fertilization occurs in Siphonariidae and Ancylidae. Limpet larvae (veliger) swims freely before settling down in a rock poll. As young limpets, they tend to remain in pools where they are underwater even at low tide and won't dry out, but as they age, they move out from the pools. Limpets can have a relatively long life span, about 15-16 years. Growth rates and longevity are inversely related. Animals under fucoids, grow rapidly and may live only 2-3 years whereas those on bare rock,