CHAPTER I

INTRODUCTION

Joint disease is one of the most important causes of lameness in horse and has an impact on equine athletic performance. In Great Britain, a study reported in 1985 found that the greater cause of attrition of young Thoroughbred from racing was lameness and among these, joint diseases figured prominently (Rossdale *et al.*, 1985).

In this thesis, the author emphases in only one type of joint disease, osteoarthritis (also called degenerative joint disease) that is perhaps the most common debilitating disease of horse performance. It implies progressive and permanent deterioration of articular cartilage. The morbidity associated with osteoarthritis; particulary the loss of function of pleasure and performance of horses, costs horse owners millions of dollars each year. The success of therapy depends on early diagnosis. However the early stages of cartilage degradation and osteoarthritis are difficult or impossible to define diagnostically. For example, technical factor in X-ray technique such as positioning and resolution of the film-screen system impact the ability of the veterinarian to identify early radiographic change (Widmer and Blevins, 1994). Magnetic Resonance Imaging (MRI) has also significant diagnostic potential in case of osteoarthritis in horse but it is not yet feasible for equine subject.

Morphologic changes associated with osteoarthritis have been well defined, but osteoarthritis is not a simple morphologic event, and there has been a lack of correlation between pathologic changes and their clinical significance (McIlwraith and Vachon, 1988). Therefore, the specific and sensitive biochemical markers reflecting abnormalities of cartilage would be efficiently useful tools for osteoarthritis investigation.

Over the past decade, researchers have developed techniques to identify and quantify metabolic products of the articular cartilage. Attempts have been made to correlate elevated levels of synovial fluid and serum markers with the stage of joint disease and to elevate their usefulness in early diagnosis and in monitoring therapy.

Monoclonal and polyclonal antibodies targeted to epitopes specifically located on cartilage proteoglycan and collagen fragment present in the synovial fluid and serum have given researchers a more specific and sensitive tool for studying articular cartilage metabolism and pathology (Ray *et al.*, 1996).

In this study, the quantitation of serum chondroitin sulfate epitopes (3B3 and WF6 epitopes) and serum hyaluronan were studied between the normal and osteoarthritic horses and were investigated the level of them in normal horses at various age ranges. All of these epitopes were determined using specific enzyme-link immunosorbent assay.