Approaches towards developing a vaccine against *Boophilus annulatus* (Acari-Ixodidae): 1-Identification of a gene for expression of gut cell surface proteins

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ABSTRACT

Genomic DNA was purified from adult female Boophilus annulatus ticks by freezing in liquid nitrogen and grinding followed by Proteinase K digestion, phenol/ chloroform/ isoamyl alcohol and ethanol precipitation. Sequences from the purified DNA were chosen for amplification by PCR with primers chosen on the basis of published B. microplus Bm86 gene, or with primers designed to amplify " 0.2 kb, 0.3 kb, 1.3 Kb and 2.2 kb DNA". The four amplicons were cloned in pMOSBlue vector to transform MOSBlue competent cells. The transfected colonies were picked up, propagated to increase the yield of r-plasmids. The r-plasmids were recovered by bacterial cell lysis and linearized by EcoRV restriction enzyme to recover the cloned DNA inserts. Cloning of the DNA inserts in pTARGET expression vector followed by transformation in JM109 competent bacterial cells. The aim was to develop protein expression system of immunogens that can be used as a vaccine against Boophilus annulatus.

Key words: *Boophilus annulatus, PCR, cloning.*

INTRODUCTION

Ticks and tick-borne diseases threat approximately 80 percent of the world's cattle population. *Boophilus* ticks are among the important, if not the most important ticks affecting the economics of cattle productivity by disease transmission and weight loss (Sutherst 1987, Ellis, 1986 Pegram and Chizyuka, 1987). Different chemicals and biological programs have been used for tick control and were partially successful and may cause host resistance. It was found that there is no available method yet to eradicate these ticks and all chemical and biological methods are not safe for the host animal, neighboring cultures and man. Therefore, the development of vaccine represents an urgent need.

The cattle tick *B. annulatus* is commonly found infesting cattle in Egypt, (Hoogstroal and Aeschlimann, 1982, El Kammah, 2001). The available knowledge about the gene sequence encoding gut cell surface protein of *B. annulatus* is restricted to some partial sequences of the intron region of Bm86- like gut cell surface protein (BA99) (de la Fuente