CHAPTER 5
OPTIMISATION OF AMMONIUM SULFATE FOR PROTEIN PURIFICATION FROM KEDAH-KELANTAN CATTLE (*BOS INDICUS*) PLACENTA

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INTRODUCTION

The purification is a necessary part of biotechnological manufacturing in biological product including antibiotic, a vitamin, and recombinant protein derived from fermentation broth or cell culture supernatant. Purification step was important in downstream processing industry. Besides, the purification of protein is known as an essential first step in molecular biological studies in figuring out their properties and biological roles, such as molecular weight, charges, hydrophobicity, and solubility. These properties can be leveraged to isolate proteins from mixture. Solubility-based protein separation is a common method in which various salts are employed for purification. Previous studies have utilised ammonium sulfate ($(NH_4)_2SO_4$ due to its high ionic strength that can break down protein and hydrogen bonds (Sattayasai, 2012). The optimal use of $(NH_4)_2SO_4$ can be determined using online ammonium sulfate calculator. Garbayo et al. (1998) mentioned that protein molecules of interest are precipitated within 40%- to 80%-$(NH_4)_2SO_4$.

In this research, the placenta of Kedah-Kelantan (KK) cattle (Bos Indicus) was chosen as the subject to investigate the presence and distribution of various types of proteins. Recent proteomic studies have extensively explored mammalian placenta cells. Prior to the