
**CHARACTERIZATION OF SERICIN PROTEIN OF DOMESTICATED SILKWORM,
BOMBYX MORI L. (LEPIDOPTERA : BOMBYCIDAE)**

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Abstract: The present paper deals with the protein profiles of silk fibres of the mulberry silkworm *Bombyx mori* L. Nistari of Bhagalpur region. The silkworms were reared in the laboratory at temperature range $25 \pm 5^\circ$ C and humidity 70 ± 80 % on Mulberry (*Morus alba*) leaves. Protein bands of silk fibres were determined using SDS - PAGE Electrophoresis. Out of the two ingredients of silk fibres i.e fibroin and sericin, the latter was considered for protein profiling due to its solubility in water. It was observed that SDS - PAGE Electrophoresis of sericin protein of cocoon of mulberry silkworm, *Bombyx mori* L. showed faint band in the range of approx. 29 - 43 kDa and the SDS - PAGE of fourth sample containing sericin showed a faint band between 43 - 66 kDa and between 66 - 97 kDa respectively. A smear was also seen between 43 - 97 kDa. 66 - 200 kDa and also a faint smear was found in the region of 29 - 66 kDa. After comparing with the standard prepared from the marker protein the molecular weight of sericin protein bands was determined and calculated as 66 kDa to 70 kDa.

KEYWORDS – *Bombyx mori*, Sericin, Mulberry Silkworm, SDS - PAGE Electrophoresis, Protein bands.

INTRODUCTION

The silk fibre is the protein synthesized by silk gland cells and stored in the lumen of the silk gland. Silk fibers are composed of from two proteins: (1) fibroin, a core protein, and (2) sericin the glue protein. The greatest sericin content is present in the outer layer of cocoon whereas the least sericin proportion is present in the innermost layer of the cocoon. Sericin is removed from fibroin during the silk manufacturing process to make silk lustrous and the removed sericin goes as waste material⁷. Sericin is hydrophilic, now- a- days sericin by-products are used as value added products. After degumming the left over is fibroin made up of two chains^{12,13}.

The quantity and nature of sericin is of fundamental characteristics in conferring distinct traits to the cocoon^{8,10}. Sericin protein is useful because of its special properties such as resist oxidation, antibacterial, UV resistance, absorb and release moisture easily, inhibit activity of tyrosine and kinase^{20,21}.

Very less information is available about the sericin protein bands of the local ecorace, *Bombyx mori* L. Nistari of Bhagalpur region, therefore, it is important to study the biochemical properties of sericin which may contribute in increasing the productivity of mulberry silk.