

## CHAPTER I



### INTRODUCTION

Sericulture or silkworm cultivation is one of the high-value industries in north and northeastern of Thailand. In the last few years, Thai silk has been exported to the foreign countries not less than 500 million baht annually (Gulid *et al.*, 2009). Developing from the household industry in the past, sericulture is presently higher equipped industry. As a result, high amount of waste products is also eliminated.

Several studies proposed the utilization of the waste products of silk industry. Silkworm pupae are considered as source of high protein feed for poultry, fish, and cattle (Pankov *et al.*, 2002) as well as high nutritional diet for human (Sathyanarayana *et al.*, 2007). Oil extracted from pupa was used for paints, soap, and varnishes (Goel and Rupachandra, 2004).

Silkworm excreta (Figure 1) are the abundant waste in sericulture. They are dark green particles with 10-20 mm. in length. The excreta were used to enrich the soil as plant fertilizer and animal feed otherwise gone waste. Recently, they have the potential to be effective manure, substrate in biogas production, insect repellent (Sinha, Dey, and Kalita, n.d.), as well as substrate for mushroom cultivation (Jadhav *et al.*, 2007). And, in some country, silkworm excreta are recognized as source for green pigment.

By the way, as mulberry leaf is the best feed for silkworm and it was reported for compounds that exhibited high free-radical scavenging (Katsube *et al.*, 2005, Lee *et al.*, 2007) and tyrosinase inhibitory activity (Shin *et al.*, 1998, Lee *et al.*, 2002). The use as an active ingredient in whitening cosmetics of white mulberry (*Morus alba* L.) leaves extracts was promoted. There is the possibility that silkworm excreta might have the

remaining active compounds from the mulberry leaves. Thus, if the silkworm excreta have the similar activities, they might be beneficial for skin aesthetic and food preserving purposes. Furthermore, manipulation of the waste products as a source for bioactive compounds would raise the commercial value of the unworthy waste. Eventually, the farmers in rural area would be positively affected by their increasing income.

Thus, this present work, the main objective is studying the chemical constituents of Thai silkworm (*Bombyx mori* L.) strain Lueang Korat excreta and its bioactivities. Moreover, the application of excreta extract in cosmetic is also evaluated for the investigation of new purpose of silkworm excreta utilization.



Figure 1 Silkworm excreta.