

EVALUATION OF DIFFERENT WAX RENDERING METHODS FROM COMBS OF HONEYBEES (*Apis cerana*) AND GIANT HONEYBEES (*Apis dorsata*) IN ANURADHAPURA DISTRICT

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Beeswax, a valuable by-product of apiculture, has often been overlooked and underutilized in local beekeeping practices due to a lack of effective wax extraction methods. Although various techniques exist globally, their adoption by local beekeepers has been limited. This research aimed to evaluate the quality and quantity of beeswax from two different sources and to compare the effectiveness of various extraction methods in producing high-quality beeswax. Old bee comb samples of *Apis cerana* and *A. dorsata* were randomly collected from beekeepers and honey hunters in the Anuradhapura district were used. Four extraction methods, solar extractor, steam extraction, manual extraction and submerged extraction method were used to extract beeswax with three replicates in each treatment. The efficiency of the melting and the time taken for the extraction were compared. Laboratory analysis was performed to evaluate the physicochemical parameters i.e. color, acid value, melting point, total volatile matter of the extracted beeswax in comparison to the commercially available beeswax. According to the results, the effect of extraction method, the species, or their interaction did not exhibit a significant difference in the efficiency of melting, acid value and total volatile matter content ($p>0.05$). However, the study revealed significant differences ($p<0.05$) in time taken to wax extraction, melting point, and color among different beeswax sources and extraction methods. The solar extraction took significantly longer time than manual and submerged methods for the extraction. The beeswax obtained in this study exhibited similar characteristics to that of beeswax available in the local market in terms of acid value, total volatile matter content, and colorimeter values. Market-available beeswax samples and *A. cerana* beeswax samples exhibited significantly similar melting points, respectively $66.22\pm1.00^{\circ}\text{C}$ and $63.94\pm0.50^{\circ}\text{C}$, both of which were significantly higher than that of *A. dorsata* beeswax samples ($60.03\pm0.50^{\circ}\text{C}$).

Keywords: Beekeepers, Beeswax, Efficiency of melting, Extraction