Study on Weight Loss and Moisture Regain of Silk Cocoon Shells and Degummed Fibers from African Wild Silkmoths

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Abstract

A study was conducted to determine weight loss and moisture regain properties of silk cocoon shells, shell layers and degummed fibers of the four African wild silkmoths *Anaphe panda, Argema mimosae, Epiphora baubinia* and *Gonometa postica* and compare with the industry standard mulberry silkmoth, *Bombyx mori*. No. significant difference was observed between the moisture regain of the wild silk fibers after degumming. However, there were significant differences in weight loss and moisture regain between cocoon shells as well as shell layers. *E. baubinia* had the lowest weight loss and moisture regain of 23.19 and 5.64%, respectively while *G. postica* had the highest weight loss and moisture regain, 56.84 and 9.05%, respectively. The SEM micrographs also showed the presence of remnant sericin gum on the fibers surface. In both *A. panda* and *E. baubinia*, the outer shell layers had the lowest moisture regain and highest weight loss while the inner layer of *E. baubinia* and middle layer of *A. panda* lost the least weight. The physical structure and chemical composition of the cocoon shells and fibers contribute towards the variation in the moisture regain and weight loss and these features may have commercial implications due to their direct effect on the resulting fabric.

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