COLOR INTENSITY AND FLOW CHARACTERISTICS OF MALABAR SPINACH (BASELLA ALBA) EXTRACT AS AN ALTERNATIVE RED INK FOR BALLPOINT PENS

AUTHORS
Dieñelruie Chacon
Erica Jane Cuballes
Rhinoa Deyzell Lagasca
Nicole Ann Manile
Roselie Nuera
Nor-Asiah Sumirado

RESEARCH ADVISER
Andrea Louise Yao

AFFILIATION
Bestlink College of the Philippines

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ABSTRACT

Ballpoint pens are widely used because of their convenience and affordability, but chemical- and petroleum-based inks may pose environmental and health concerns when improperly disposed of. These concerns have encouraged the development of plant-based ink alternatives intended to reduce ecological impact while retaining acceptable writing performance. The study used a quantitative descriptive research design. Fifteen respondents, described as 25% students, 25% teachers, and 50% chemists, were purposively selected as frequent ballpoint-pen users able to evaluate color intensity, legibility, and smoothness. Data were gathered through observation and evaluation of the ink during standard writing tasks. Malabar spinach (Basella alba) berries produced a concentrated pigment after boiling and crushing. Testing indicated that filtration was necessary to support flow through a ballpoint-pen tip and reduce clogging. Evaluators described the ink as visible and usable for writing, although it dried more slowly and appeared slightly less vibrant than conventional synthetic ink. No numerical evaluation results were reported. The findings indicate that Malabar spinach extract has potential as a plant-based red ink, but filtration, drying time, color stability, and flow require further development. Additional laboratory testing should assess durability, shelf life, microbial stability, toxicity, staining, material compatibility, and comparative writing performance before the formulation is described as a safe functional substitute.

RECOMMENDED CITATION

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