Quality Control Assessment and Standardization Approaches of Herbal Oils: St John's-Wort, Marigold and Black Cumin Seed

Ebrar İnal-Kılıçarslan *
Faculty of Pharmacy, Department of Pharmacognosy, Bezmialem Vakıf University, Istanbul, Türkiye

M. Kartal
Phytotheraphy Research Center, Bezmialem Vakıf University, Istanbul, Türkiye

Abstract

Herbal oils are widely used in food, cosmetic, and pharmaceutical applications due to their bioactive constituents and therapeutic properties. Their chemical composition and quality can vary significantly depending on plant species, cultivation, extraction, and storage conditions, making rigorous quality control essential. In this study, a comparative quality control analysis was performed on St John's-wort (*Hypericum perforatum* L.), marigold (*Calendula officinalis* L.,) and black cumin seed (*Nigella sativa* L.) oil samples which are very important for their pharmaceutical and food industries and available on the web and local markets, focusing on key chemical parameters. Results revealed that half of the St. John's wort oils failed to meet quality criteria for hypericin content, whereas marigold and black cumin generally satisfied established standards. These findings highlight the importance of an integrated analytical approach to ensure the nutritional, pharmaceutical, and therapeutic efficacy of herbal oils, providing a scientific basis for their consistent and reliable use in industrial and clinical applications.

Keywords

Quality control, Standardization, St John's-wort oil, Marigold oil, Black cumin seed oil.