Screening and Evaluation of Plant Extracts That are Used in Qatari Skin Depigmenting Folkloric Recipe for Their Safety and Tyrosinase Inhibitory Effects Using Zebrafish In Vivo Model

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The skin, the body's largest organ, consists of three layers: the epidermis, dermis, and hypodermis, each with distinct roles. Skin hyperpigmentation disorders, such as Post-inflammatory hyperpigmentation (PIH), melasma, and freckles, often occur in sun-exposed areas, negatively impacting psychological well-being. Melanin, produced by melanocytes in the epidermis, is responsible for skin color. The enzyme tyrosinase plays a key role in melanin synthesis, and inhibitors like hydroquinone and kojic acid are commonly used in skin-lightening creams. However, long-term use of these chemicals can cause adverse side effects. As a result, the search for safer, plant-based depigmenting agents has gained momentum. Herbal medicine, often considered a safer alternative, is widely used globally, emphasizing sustainability and cultural preservation. In Qatar, folk remedies for skin-lightening, especially those based on plant extracts, are common but should be approached cautiously. Zebrafish (Danio rerio) have emerged as a popular model for studying skin pigmentation due to their transparency and visible melanin production, making them ideal for testing the safety and efficacy of depigmenting agents. The current study aims to identify effective skin-lightening plant extracts by assessing their tyrosinase inhibitory activity and testing them for safety and effectiveness on zebrafish embryos. Preliminary data suggest that certain plant extracts have high tyrosinase inhibitory effects, showing promise as potential depigmenting agents for further research.

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