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OPTIMIZATION OF MORUS NIGRA L. LEAF EXTRACT FOR TYROSINASE INHIBITION: INFLUENCE OF ETHANOL CONCENTRATION, TIME, AND EXTRACTION METHOD

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Morus nigra L., also popularly known as black mulberry, exhibits various therapeutic effects that have been demonstrated in studies, such as anti-inflammatory and antihyperlipidemic actions, and most notably, its potential depigmenting effect through the inhibition of L-tyrosinase, an enzyme that catalyzes melanin synthesis. Due to their significant potential, including therapeutic applications, industries are increasingly using plant extracts to obtain components capable of assisting various sectors, from the food industry to pharmaceuticals. Therefore, optimizing the extraction process is necessary to reduce resource consumption, such as time and money. Given these contexts, the present study aimed to optimize the process of obtaining the hydroethanolic extract from Morus nigra L. leaves by varying ethanol concentration, extraction time, and method. These variables were tested through enzymatic assays for L-tyrosinase inhibition and compared with a positive standard, followed by high-performance liquid chromatography (HPLC) analysis to evaluate the compounds extracted in each sample. This study allowed us to infer that the isolated flavonoids, isoquercetin and chlorogenic acid, do not directly inhibit the enzyme. However, reducing the ethanol concentration in the extract may be a viable approach to optimize and replace the standard extract while also saving resources. Another important factor is the extraction time, as extracts obtained in 2 hours through active maceration showed high IC_{50} values compared to the others.

Keywords: *Morus nigra L.; extraction optimization; L-tyrosinase; inhibition; hydroethanolic extract;*