

## Novel mushroom Tyrosinase Inhibitor: *Moringa oleifera* Leaf Extracts

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### Abstract

*Moringa oleifera* leaf, valued for its functional and medicinal properties due to its outstanding phytochemical, antimicrobial and antioxidant properties. However, there is insufficient scientific evidence to back up its antioxidant activity against tyrosinase, an enzyme that catalyses the browning reaction. Thus, this study aimed to determine the effect of *Moringa oleifera* leaf extracts on the activity of tyrosinase. Ultrasound-assisted extraction was utilized to prepare the acetone, aqueous, ethanol, and methanol extracts from the *Moringa oleifera* leaf powder. The extracts were profiled for phytochemicals using Liquid chromatography-mass spectrometry (LC-MS). Specific phytochemicals identified include flavonoids such as chlorogenic acid (38.2 mg/L), kaempferol (86.4 mg/L), rutin (217.5 mg/L), and isoquercetin (216.6 mg/L). The anti-tyrosinase activity of the extracts was done using the 96-well plate method in the presence of mushroom tyrosinase and kojic acid as a control. The  $IC_{50}$  of the extracts differed significantly ( $p < 0.05$ ) ranging from  $34.66 \pm 3.03 \mu\text{g/ml}$  for aqueous to  $71.29 \pm 1.33 \mu\text{g/ml}$  for ethanol. The aqueous extract was significantly lower, and ethanol was significantly higher in  $IC_{50}$  compared to other extracts. Thus, the extracts can be used in the processing of fruits and vegetables as novel natural tyrosinase inhibitors.