

Determination of tyrosinase inhibitory activity and betanin content changes in beetroot (*Beta vulgaris*) extracts fermented by EM

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ABSTRACT

Beet (*Beta vulgaris*) is a crop similar to sugar beet, chard and leaf beets, and its origin is the Mediterranean coast of southern Europe and Central Asia. Among the components contained in beet, betalain, the main component of the root, has been reported to prevent lipid peroxidation induced by active oxygen and free radicals due to its high radical scavenging ability. Among these, the betalain, betanin (Betanidin 5-O- β -glucoside) contains both phenolic and cyclic amine groups, all of which are highly electron-donating and act as antioxidants and has tyrosinase inhibitory activity. Betanin accounts for about 75-95% of the total pigment found in the beet.

EM stands for effective microorganisms and is a collection of beneficial microorganisms. EM includes yeast, lactic acid bacteria, mycelia, photosynthetic bacteria, actinomycetes, etc. Human patch test according to CTFA guidelines was observed to be a safe source of no stimulation when 5% (v/v) of the EM fermentation liquid was applied to the human body. In addition, beneficial microorganisms are synergistic in the process of co-existence and cultivation and it has the effect of increasing antioxidant capacity and inhibiting corruption.

This study confirms the difference in tyrosinase inhibitory activity and betanin content of beetroot extracts and EM fermented beetroot extracts. Hence, these results confirm that EM fermented beetroot extracts are highly beneficial for the human body.

Keywords: beet, tyrosinase inhibitory activity, betanin, EM, UPLC

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