

In vitro study on skin whitening and anti-aging potential of leaves of *Moringa oleifera* Lam. (Murunga)

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Introduction

Moringa oleifera which is known as the “Miracle Tree” is one of the most useful tropical trees. Various parts of this plant has been used in Sri Lankan traditional system of indigenous medicine for variety of diseases and reported to have various health properties. However, studies on skin whitening and anti-aging properties of *M. oleifera* is extremely limited.

Methodology

Hot water extract of *M. oleifera* (2 g in 100 mL) was used in this study. Skin whitening and anti-aging properties were evaluated using; anti-tyrosinase (AT), anti-elastase (AE), anti-collagenase (AC) and anti-hyaluronidase (AH) activities *in vitro* (n=3 each). Quercetin (AT activity) and epigallocatechin gallate (EGCG: AC and AH activities) were used as the reference drugs. Phenolic compounds [(PC): arbutin, 4-hydroxybenzoic acid, epicatechin, quercetin, gallic acid, kaempferol, ferulic acid and catechin n=3 each] were quantified using High Performance Liquid Chromatography (HPLC).

Results

Table 1: Skin whitening and anti-ageing properties

Activity	IC ₅₀ (mg/ml)
Anti-collagenase	0.79±0.01
Anti-tyrosinase	1.88 ± 0.08
Anti-hyaluronidase	4.96 ± 1.67% inhibition at 1.5 mg/ml
Anti-elastase	-14.96 ± 1.67% inhibition at 1.5 mg/ml

AT: IC₅₀ Quercetin 29.38±0.49 µg/ml; IC₅₀ EGCG: for AC & AH: 112.12±0.93 & 90.00±0.00 µg/ml respectively.

Table 2: Quantification of Phenolic Compounds (µg/g of extract)

Arbutin	Kaempferol	Epicatechin	Catechin	4-Hydroxybenzoic acid	Quercetin	Gallic acid	Ferulic acid
67154 ± 295	416 ± 24	ND	270 ± 32	37 ± 0.8	ND	453 ± 8	ND

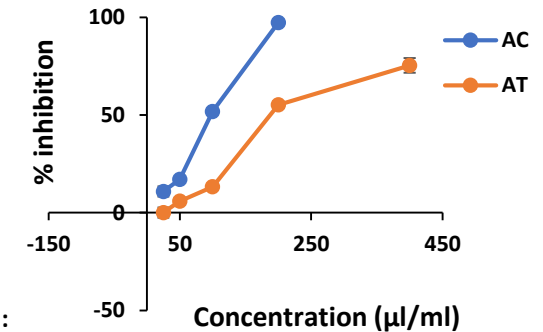


Fig 1: Dose response relationship

Conclusions

Leaves of *M. oleifera* possess marked skin whitening and anti-aging properties with significantly high quantity of arbutin, a known skin whitening agent used in the cosmetic industry. Therefore, leaves of *M. oleifera* may have the potential in utilizing effectively in development of novel skin whitening and anti-aging cosmaceuticals.