Anti-elastase, anti-collagenase and antimicrobial activities of the underutilized red pitaya peel: an in-vitro study for anti-aging applications

ABSTRACT

Objective: To investigate the in vitro anti-elastase, anti-collagenase, and antimicrobial activities of the red pitaya peel extract for cosmetic application focusing on skin aging. Methods: Extraction was performed by the reflux method for 103 minutes at 56Â°C with 82% aqueous ethanol solution and the red pitaya peel extract was evaporated using a rotary evaporator. Anti-elastase and anti-collagenase properties were evaluated using the drug discovery kits (neutrophil elastase colorimetric and matrix metalloproteinase-1 colorimetric, respectively). The antimicrobial potential was analyzed using agar well diffusion method against 10 selected microorganisms, and the presence or absence of the inhibition zones was identified. Results: The red pitaya peel extract exhibited remarkable inhibition percentage 87.62Â±0.05% and 96.92Â±0.02% for anti-elastase and anti-collagenase activities, respectively. Red pitaya peel extract showed significant inhibition against the Gram-positive Bacillus subtilis B29 with an inhibition zone diameter of 8.0Â±0.3 mm. Conclusion: The excellent anti-aging properties displayed by the underutilized red pitaya peel extract highlighted its potential as a natural source of anti-aging agent for cosmetic formulations.

Keyword: Skin aging; Anti-elastase; Anti-collagenase; Antimicrobial; Red pitaya peel