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Downregulation of Matrix Metalloproteinase-1 (MMP-1) and In Vivo skin efficacy by PBC140 Malaysian Cocoa Bean Extract

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Abstract

Flavonoids are one of the major components found in *Theobroma cacao*. Present evidence has suggested that major flavonoid content, inlcuding catechin and epicatechin isolated from cocoa bean extract (CBE), have many biological properties such as anti-inflammatory, antioxidant, reduction of oxidative stress, anti-aging etc. In this study, we investigated the effect of potential Malaysian cocoa bean extract, i.e. PBC140 on the inhibition of ultraviolet A (UVA)-induced matrix metalloproteinase-1 (MMP-1) expression, a major marker of skin photoaging in human dermal fibroblasts (HDF). An assessment has been conducted on the MMP-1 level using quantitative polymerase chain reaction (qPCR) in 5 J/cm^2 UVA-induced HDF cell lines treated with CBE in a dose-dependent manner (2.5 x10^2 – 1.0x10^3 µg/mL). Reduction of MMP-1 expression of the CBE of PBC140 at 5x10^2 and 1x10^3 µg/mL, by 9.34- and 25-folds relative to the calibrator, respectively, have verified its significant photo protective effect for skin anti-aging. Intervention of approximately 500 mg 0.1% (w/v) CBE formulation on 20 human subjects aged between 30 to 46 years for 2 months duration in the *in vivo* skin efficacy studies recorded significant (p<0.05) percent changes of skin texture parameters, namely volume (-40%), energy (46%), contrast (-18%) and variance (-21%). The skin elasticity parameter for CBE formulation recorded significant (p<0.05) increment of ten times compared to placebo group. To conclude, Malaysian CBE is a potential active material due to the encouraging results of MMP-1 down regulation and *in vivo* skin efficacy that meet the primary objective of producing harmless yet natural cosmeceutical with significant skin improvement.

Biography:

Norliza Abdul Wahab has completed her PhD from Halal Product Research Institute, Universiti Putra Malaysia (UPM) on 2019 in a field of Halal Product Development. She has also been serving Malaysian Cocoa Board (MCB) since 2002, specializing in cocoa-based cosmetic product development.

Speaker Publications:

1. Norliza Abdul Wahab, Russly Abdul Rahman, Amin Ismail, Shuhaimi Mustafa and Puziah Hashim1. (2014). Assessment of Antioxidant Capacity, Anti-collagenase and Anti-elastase Assays of Malaysian Unfermented Cocoa Bean for Cosmetic Application. 10.4172/2329-6836.1000132.

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