Accepted Manuscript

Molecular targets and anti-cancer potential of escin

Dorothy H.J. Cheong, Frank Arfuso, Gautam Sethi, Lingzhi Wang, Kam Man Hui, Alan Prem Kumar, Thai Tran

PII: S0304-3835(18)30160-5

DOI: 10.1016/j.canlet.2018.02.027

Reference: CAN 13777

To appear in: *Cancer Letters*

Received Date: 5 January 2018

Revised Date: 6 February 2018

Accepted Date: 15 February 2018

Please cite this article as: D.H.J. Cheong, F. Arfuso, G. Sethi, L. Wang, K.M. Hui, A.P. Kumar, T. Tran, Molecular targets and anti-cancer potential of escin, *Cancer Letters* (2018), doi: 10.1016/j.canlet.2018.02.027.

Abstract

Escin is a mixture of triterpenoid saponins extracted from the horse chestnut tree, *Aesculus hippocastanum*. Its potent anti-inflammatory and anti-odematous properties makes it a choice of therapy against chronic venous insufficiency and odema. More recently, escin is being actively investigated for its potential activity against diverse cancers. It exhibits anti-cancer effects in many cancer cell models including lung adenocarcinoma, hepatocellular carcinoma and leukemia. Escin also attenuates tumor growth and metastases in various *in vivo* models. Importantly, escin augments the effects of existing chemotherapeutic drugs, thereby supporting the role of escin as an adjunct or alternative anti-cancer therapy. The beneficial effects of escin can be attributed to its inhibition of proliferation and induction of cell cycle arrest. By regulating transcription factors/growth factors mediated oncogenic pathways, escin also potentially mitigates chronic inflammatory processes that are linked to cancer survival and resistance. This review provides a comprehensive overview of the current knowledge of escin and its potential as an anti-cancer therapy through its anti-proliferative, pro-apoptotic, and anti-inflammatory effects.