Pharmacogn. Commn. 2017; 7(4):174-175
A multifaceted peer reviewed journal in the field of Pharmacognosy and Natural Products
www.phcogcommn.org

This occasional section within the journal surveys visions and achievements, often not on the main track of the developing biomedical sciences, but all relating to discoveries and developments of medicinals – both ancient and modern. What they have in common, in one way or another, is providing further background and glances around the edges of the core discipline of pharmacognosy, as it has been and continues to evolve within our times.

Dandelion Tea is Effective at Killing Cancer Cells

Ian E Cock[1,2]*, Esther SG Cock[3]
[1]School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland-4111, AUSTRALIA.
[2]Environmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland-4111, AUSTRALIA.
[3]Medical Oncology Dept, Mater Hospital, Raymond Terrace, South Brisbane, 4101, AUSTRALIA.

Plant species of the genus *Taraxacum* (commonly known as dandelion) have a long history of use in the treatment of a myriad of medical conditions including uses for the eradication of pathogenic disease, the treatment of liver complaints and as a diuretic.[1] A recent study from researchers at the University of Windsor in Ontario, Canada has reported that dandelion root extracts are also effective in fighting cancer.[2-6] Of particular note, dandelion root extracts induced apoptosis in a chronic myeloid leukaemia cell line.[5] That finding was noteworthy as the cell line tested was particularly aggressive and is resistant to many other cancer chemotherapy agents. The research team have also trialled the extract on other leukaemia cell lines,[2] as well as melanoma[3] and pancreatic cancer[4] cells with similar results. Whilst this finding is promising for people with these diseases, the authors of the study have urged caution. Bioactive compounds within the dandelion root may interfere with conventional cancer chemotherapies. It is therefore important that patients do not mix the natural remedy with conventional chemotherapies without close medical supervision and that patients notify their medical practitioners if they intend to use dandelion root formulations for these purposes.

REFERENCES

1. Schütz K, Carle R, Schieber A. Taraxacum – a review on its phytochemical and pharmacological profile. Journal of Ethnopharmacology. 2006;107(3):313-23.

2. Ovadje P, Chatterjee S, Griffin C, et al. Selective induction of apoptosis through activation of caspase-8 in human leukemia cells (Jurkat) by dandelion root extract. Journal of Ethnopharmacology. 2011;133(1):86-91.

3. Chatterjee SJ, Ovadje P, Mousa M, et al. The efficacy of dandelion root extract in inducing apoptosis in drug-resistant human melanoma cells. Evidence-Based Complementary and Alternative Medicine 2010; article ID 129045.

4. Ovadje P, Chochkeh M, Akbari-Asl P, et al. Selective induction of apoptosis and autophagy through treatment with dandelion root extract in human pancreatic cancer cells. Pancreas. 2012;41(7):1039-47.

5. Ovadje P, Hamm C, Pandey S. Efficient induction of extrinsic cell death by dandelion root extract in human chronic Myelomonocytic Leukemia (CMML) cells. PloS One. 2012;7(2):p.e30604.

6. Ovadje P, Ammar S, Guerrero JA, et al. Dandelion root extract affects colorectal cancer proliferation and survival through the activation of multiple death signalling pathways. Oncotarget. 2016;7(45):p.73080.

Correspondence:

Ian E Cock

School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.

Environmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.

Phone no: +61 7 37357637; Fax no: +61 7 37355282.

Email: I.Cock@griffith.edu.au (I. E. Cock)

Tarantula venom alleviates pain

Ian E Cock[1,2]*
[1]School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland-4111, AUSTRALIA.
[2]Environmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland-4111, AUSTRALIA.

The venom from animals such as spiders, scorpions snakes and marine anemones and cone snails can cause serious reactions when injected into humans and unless treated in a timely manner, may even be lethal. However, a recent study from a research team at the University of Queensland in Brisbane, Australia has reported that Peruvian tarantula (*Thrixopelma pruriens*) venom also has beneficial effects for sufferers of chronic pain.[1] The group has identified a protein toxin designated ProTx-II which is implicated in the analgesic properties of the venom. The ProTx-II protein binds to a binding domain of the TRPA1 neural membrane receptor, inducing a response which reduces the sensation of pain. Binding to the TRPA1 binding domain antagonises the ion channel activity of the membrane protein, affecting transmembrane cation transport. The specific peptide-receptor binding site is not yet known and work is ongoing to explore the ProTx-II structure-activity relationship. The group has elucidated the 3 dimensional structure of the protein using NMR spectroscopy, plasmon resonance and fluorescence methods, as well as

molecular simulation modelling. Their studies have determined that the neuronal cell membrane structure has an important role in the analgesic mechanism by attracting and localising the protein near the pain receptors in the correct orientation to enable binding. This has allowed the group to design new toxins with greater TRPA1 binding affinity and fewer side effects. As milliuons of people globally suffer from chronic pain, this project has wide ranging interest.

REFERENCES

1. Gui J, Liu B, Cao G, *et al*. A tarantula-venom peptide that antagonises the TRPA1 nocieptor ion channel by binding to the S1-S4 gating domain. Current Biology. 2014;24(5):473-83.