

The Janus Corner

Looking Back



Looking Forward

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.

Ginger May Assist in the Prevention of Colon Cancer

I.E.Cock^{ab*}

^aBiomolecular and Physical Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, Australia.

^bEnvironmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, Australia.

A recent study published in *Cancer Prevention Research* has highlighted the potential of ginger (*Zingiber officinale*) in the prevention of colorectal cancer.^[1] It was reported that ginger root extract inhibited the enzyme cyclooxygenase (COX) which is involved in the production of inflammatory eicosanoids, and particularly of prostaglandin E₂ (PGE₂). This is a significant finding as previous studies have linked the up-regulation of PGE₂ with the events associated with the early development of colorectal cancer.^[2] It has previously been shown that ginger extracts can down-regulate COX in cultured cell lines^[3] and has also been linked to lowering the incidence of colon cancer in rats.^[4] The recent *Cancer Prevention Research* study tested the effects of a daily dose of ginger extract on the levels of PGE₂ and other important eicosanoid biomarkers in healthy human volunteers as an indicator of cancer prevention. A significant decrease in the levels of PGE₂ and 5-HETE, as well as a trend towards significant decreases in 12-HETE and 15-HETE were observed when normalised to free arachidonic acid. The authors

conclude that ginger extract may decrease eicosanoid levels in colorectal cells by inhibiting their synthesis from arachidonic acid and may therefore be beneficial for individuals with a high risk of colorectal cancer. Further research is warranted.

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*Correspondence:

Tel.: +61 7 37357637; fax: +61 7 37355282

E-mail address: editor@phcogcommn.org,

I.Cock@griffith.edu.au

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Australian Honey Proves to be a Sweet Antibacterial Agent

I.E.Cock^{ab*}

^aBiomolecular and Physical Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, Australia.

^bEnvironmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, Australia.

The majority of antibacterial agents from natural sources have come from plants, fungi or bacterial organisms.^[1] In comparison, the number of useful antimicrobial agents derived from animals/animal products is relatively small. Honey has long been known to have antibacterial properties and has been used in the treatment of wound infections since ancient times. The antibacterial potency of honey has been shown to be linked to the levels of the active constituent methylglyoxal (MGO). The higher the MGO level, the more potent the honey is as an antiseptic. Until recently, the 'gold standard' for antibacterial honey has been Manuka honey (produced by bees feeding on *Leptospermum scoparium*) due to its high levels of MGO. However, recent studies by a Brisbane based team have indicated that honey produced by bees feeding on a related Australian native plant *Leptospermum polygalifolium* (commonly

known as jelly bush or lemon-scented tea tree) has the highest MGO levels of any honey, even higher than the levels in Manuka honey.^[2] Levels of MGO have regularly been recorded in *L. polygalifolium* honeys at >1750 mg/kg, indicating that it could be useful in the treatment of super-resistant bacteria. The team is further evaluating the antibacterial activity of the honey and investigating the synergistic effects of MGO with other constituents in the honey to increase its potency

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*Correspondence:

Tel.: +61 7 37357637; fax: +61 7 37355282

E-mail address: editor@phcogcommn.org,

I.Cock@griffith.edu.au

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Green Tea in the Treatment of a Congenital Disease and Tumors

I.E.Cock^{ab*}

^a*Biomolecular and Physical Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, Australia.*

^b*Environmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, Australia.*

A collaboration between research groups in Philadelphia and Saint Louis has highlighted the potential of the green tea polyphenols epicatechin gallate (ECG) and epigallocatechin gallate (EGCG) in the treatment of the deadly congenital disease hyperinsulinism/hyperammonemia syndrome (HHS).^[1] Individuals with HHS respond to the consumption of dietary protein by secreting high levels of insulin, resulting in dangerously low blood glucose levels. If left untreated, HHS may lead to death. Recently, HHS has been linked with loss of regulation of the enzyme glutamate dehydrogenase (GDH).^[2] The US group has shown that oral administration of ECG and EGCG can inhibit GDH, thus blocking HHS.^[1] This research also has more wide reaching applications in the treatment of other diseases. For example, it has also been shown that glioblastoma cells require an active GDH to survive,^[3]

indicating the potential of ECG and EGCG as lead products in the treatment of tumors.

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*Correspondence:

Tel.: +61 7 37357637; fax: +61 7 37355282

E-mail address: editor@phcogcommn.org,

I.Cock@griffith.edu.au

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