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The Janus Corner

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.

Scutellaria baicalensis is Useful in the Treatment of Cancer and Liver Disease

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Scutellaria baicalensis (commonly known as Huang-Qin) is a plant used in traditional Chinese medicine (TCM) to treat fever, as well as liver and lung disorders. A recent study isolated the flavones wogonin and baicalin from the roots of this species and tested them for antioxidant capacity and antiviral activity.[1] Interestingly, whilst these effects were noted, the authors also noted that wogonin and baicalin induced cell death in human cancer cells yet were nontoxic to normal human cell lines. Furthermore, wogonin and baicalin stopped tumour growth in an *in vivo* model system, indicating there efficacy and potential in cancer chemotherapy. Whilst many flavones have previously been linked with useful therapeutic properties the *S. baicalensis* root flavones wogonin and baicalin are unique in that they lack a hydroxyl group in their structure. Flavones are generally synthesised from naringenin, which contains the hydroxyl group. No known enzyme that removes the hydroxyl group has been found in *S. baicalensis* roots, making its mechanism of synthesis unique. The authors of the study determined that wogonin and baicalin were instead synthesised from a different precursor, chrysin (Figure 1). Understanding this pathway may enable the production of these bioactive flavones in large quantities.

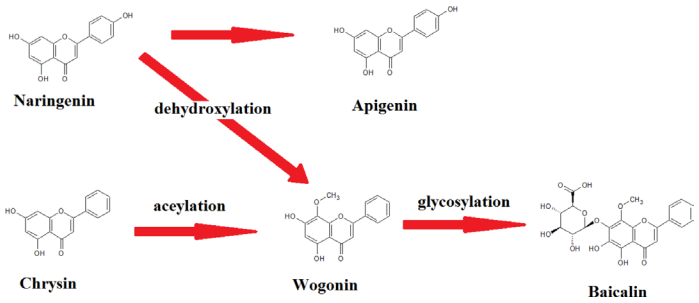

Figure 1: The synthesis of flavones from naringenin. In this figure the synthesis of apigenin is depicted. The dihydroxylation of naringenin may also result in wogonin synthesis. However, no dehydroxylase capable of catalysing this reaction have been detected in *S. baicalensis* root. An alternative synthesis pathway fro chrysin has been proposed. One produced, wogonin can be further modified and glycosylated to produce baicalin.

REFERENCES

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Epigallocatechin-3-gallate in green tea may be useful in the prevention of cardiac disease

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A recent collaborative study between Lancaster and Leeds Universities have identified the compound epigallocatechin-3-gallate (EGCG) present in green tea with interesting medicinal properties.[2] This compound is already known for its ability to reduce amykloid plaques in Alzeheimer's disease. Interestingly, the authors of this study also determined that EGCG breaks up and dissolves fatty plaques in blood vessels, thereby decreasing the likelihood of the patient developing atherosclerosis. In the advanced stages of this disease, the apolipoprotein A-1 (apoA-1), can form amyloid deposits that are similar is structure to the plaques associated with Alzeheimer's disease. These plaques can build up in the blood vessels, restricting blood flow and increasing the risk of heart attack or stroke. EGCG can reduce the incidence of atherosclerosis by binding to the amyloid fibres of apoA-1, making them more soluble and reducing the chance of plaque formation. To date, the usefulness of this compound has been hampered by its relatively low bioavailability, resulting in the necessity to consume large amounts of green tea to get a therapeutically useful dose. The authors of that study are currently working on modifying the structure of EGCG to increase the gastrointestinal absorption

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