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 their 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.

REFERENCES
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. This compound is already known for its ability to reduce amyloid plaques in Alzheimer’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 in structure to the plaques associated with Alzheimer'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.

REFERENCES