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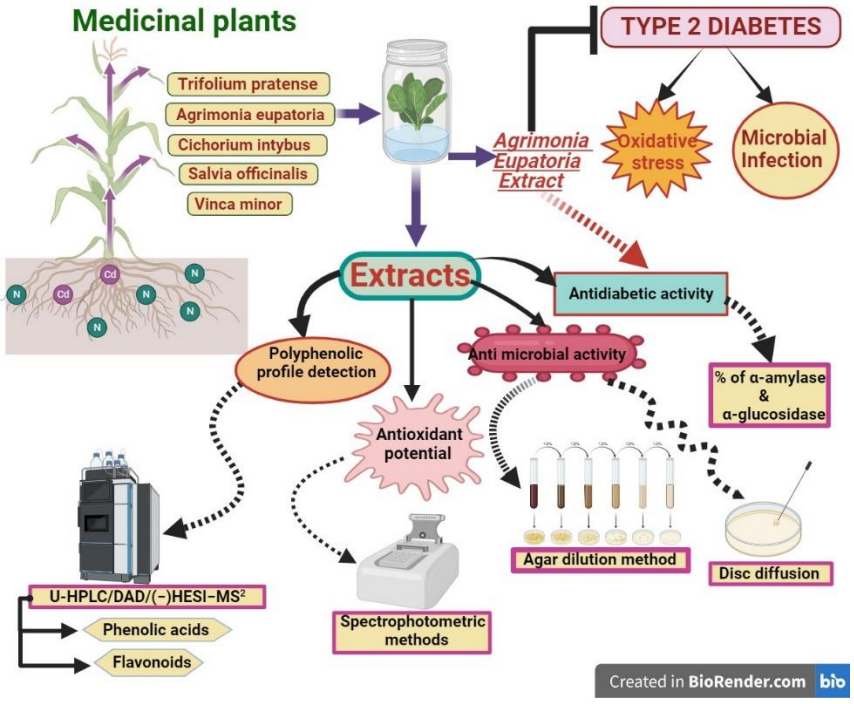
Editor's Choice

Editor's Selection of the Important Research Investigations in the Field of Phytopharmacological Communications from Around the World

Editorial Staff

Comparative Antidiabetic Effects of Five Medicinal Plants

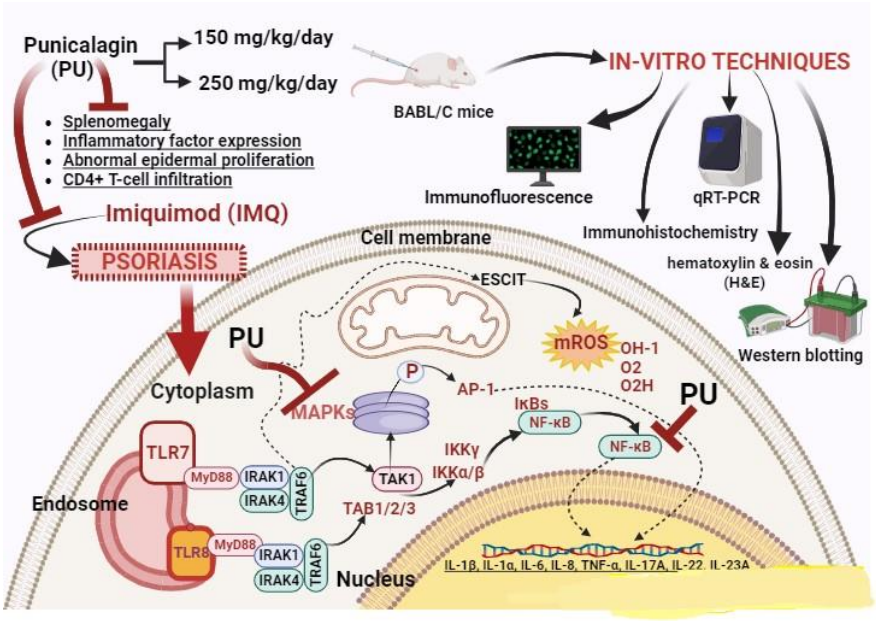
Kukavica and colleagues examined the antidiabetic, antioxidant, and antimicrobial properties of ethanol extracts of five medicinal plants, *Salvia officinalis*, *Trifolium pratense*, *Agrimonia eupatoria*, *Cichorium intybus*, and *Vinca minor* for their possible use in the treatment of type 2 diabetes (T2D). It was found that *A. eupatoria* extract contains the highest percentage of flavonoids and showed excellent antidiabetic, antioxidant, and antimicrobial activity. Their study revealed that *S. officinalis* extract contains slightly fewer flavonoids and showed weaker antidiabetic activity but stronger antioxidant activity, and excellent antibacterial activity. *T. pratense* A extract was found to possess a slightly lower percentage of flavonoids compared to *S. officinalis,* had excellent antidiabetic activity but weaker antioxidant and antimicrobial activity. *C. intybus* was found to possess a similar percentage of flavonoids and phenolic acids, and showed moderate antidiabetic, antioxidant, and antimicrobial properties.



The richest source of phenolic acids was *V. minor* (80%, with the most abundant chlorogenic acid), which resulted in weaker antidiabetic and antioxidant activities (except for Fe^{2+} chelating ability) and antimicrobial activity. Their results suggest that *A. eupatoria* has the greatest potential for developing into a T2D treatment. J Ethnopharmacol. 2024 Feb 10:320:117377. doi: 10.1016/j.jep.2023.117377.

MAPK/ERK and NF-κB signaling pathways mediate attenuation of psoriasis by punicalagin

Psoriasis is a chronic autoimmune skin disorder characterized by the rapid and excessive growth of skin cells. It is a non-contagious condition that results in the formation of thick, red, and scaly patches on the skin surface. Psoriasis can affect various parts of the body and is often associated with other health issues. Wang and colleagues explored the impact and molecular mechanism of punicalagin (PU) on M5-stimulated keratinocyte cell lines and imiquimod (IMQ)-induced psoriasis-like skin inflammation in BABL/c mice.

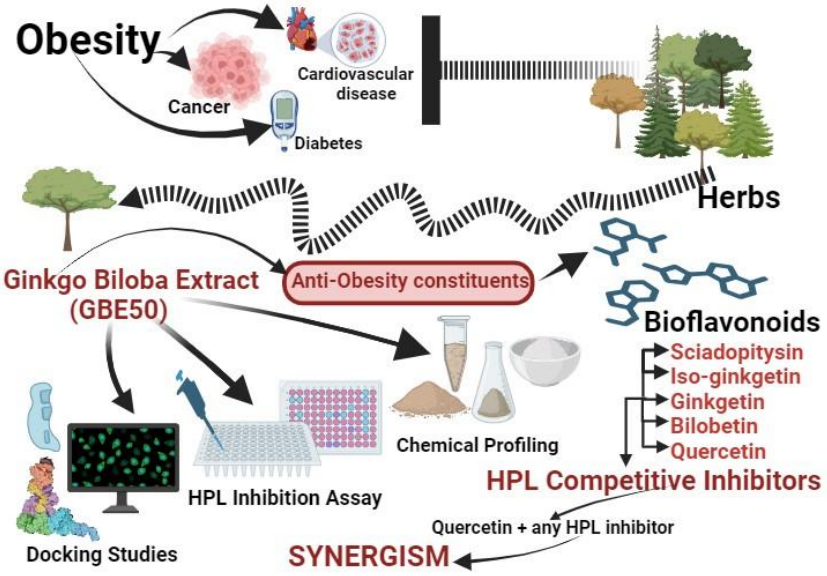


Their findings reveal that several indicators of psoriasis and its severity such as splenomegaly, IMQ-induced abnormal epidermal proliferation, CD4+ T-cell infiltration, and inflammatory factor expression were abrogated by PU-enriched pomegranate extract at dosages of 150 and 250 mg/kg/day. The expression levels of pro-inflammatory cytokines, such as IL-1β, IL-1α, IL-6, IL-8, TNF-α, IL-17A, IL-22, IL-23A, and reactive oxygen species (ROS) were also decreased. This was followed by the inhibition of keratinocyte proliferation in the M5-stimulated cell line model of inflammation. This keratinocyte proliferation inhibition is believed to be mediated through the inhibition of mitogen-activated protein kinases/extracellular regulated protein kinases (MAPK/ERK) and nuclear factor kappaB (NF-κB) signaling pathways. Their findings suggest that PU may serve as a promising nutritional intervention for psoriasis by ameliorating cellular oxidative stress and inflammation. Phytother Res. 2023 Nov 27. doi: 10.1002/ptr.8071.

Anti-obesity constituents in *Ginkgo biloba* extract

Obesity is a complex health condition characterized by an excess accumulation of body fat. It is associated with various health risks, including cardiovascular disease, type 2 diabetes, and certain cancers. While lifestyle modifications, including a balanced diet and regular exercise, are fundamental components of obesity management,

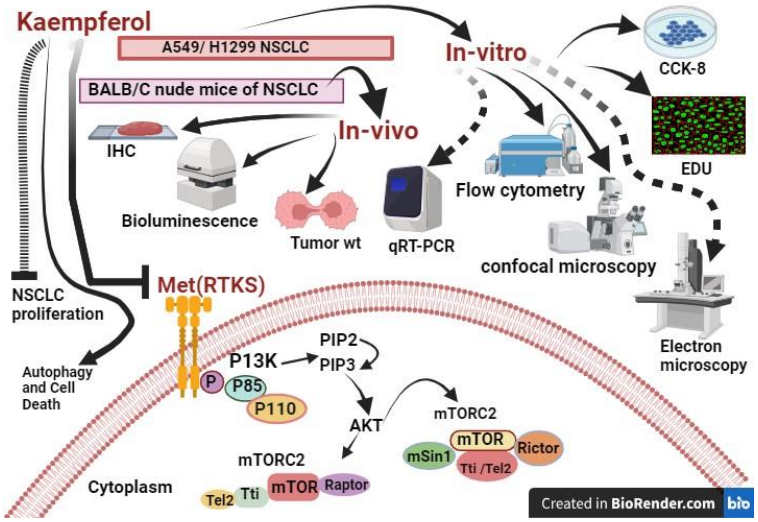
several researchers explore complementary and alternative approaches, such as herbal medicine. Zhang and colleagues demonstrated a case study for uncovering the anti-obesity constituents in an anti-obesity herbal medicine (Ginkgo biloba extract) and deciphering their synergistic effects via targeting human pancreatic lipase (hPL). After screening eighty medicinal plants, they found that the most potent anti-hPL activity *was possessed by* Ginkgo biloba extract (GBE50).



They isolated thirty-eight compounds and found that several of them were potent hPL inhibitors showing IC_{50} values <2.5 μM). Docking studies found that sciadopitysin, bilobetin, isoginkgetin, and ginkgetin) could tightly bind on hPL at cavity 2, which is different from the binding cavity of quercetin on hPL. After further experiments they found that sciadopitysin or bilobetin in combination with quercetin showed synergistic anti-hPL effects, suggesting that the multi-components in GBE50 may generate a more potent anti-hPL effect. They concluded that anti-obesity constituents in GBE50, act synergistically at the molecular level, which will be very helpful for further understanding the anti-obesity mechanisms of Ginkgo biloba. Fitoterapia. 2023 Dec:171:105669. doi: 10.1016/j.fitote.2023.105669.

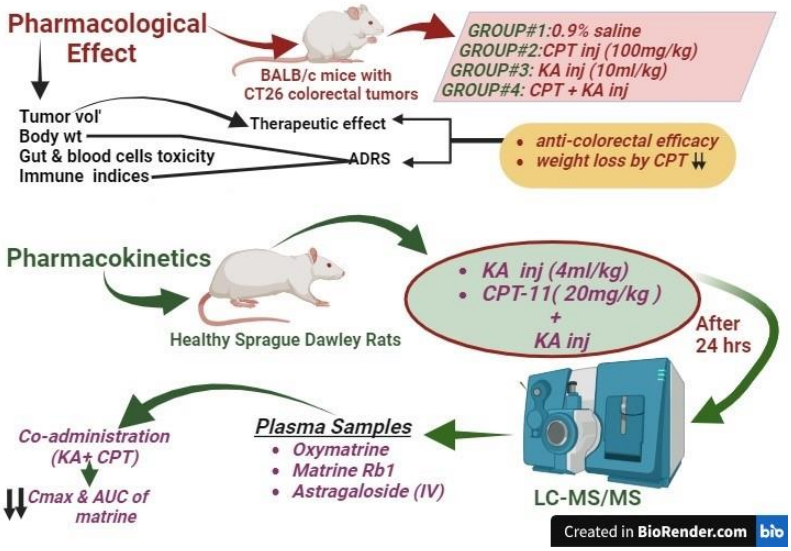
Kaempferol Promotes Lung Cancer Cell Autophagy

Autophagy is a cellular process involved in the degradation and recycling of cellular components, and it plays a complex role in cancer. In the context of lung cancer, including lung cell cancer, the relationship between autophagy and cancer is multi-faceted and can vary depending on the specific circumstances. Wang and colleagues investigated the molecular mechanism by which kaempferol (from Hedyotis *diffusa*) promotes autophagy in Non-Small Cell Lung Carcinoma (NSCLC) cells. Their results suggest that kaempferol significantly inhibits NSCLC cell proliferation. Kaempferol also caused NSCLC cell death by promoting NSCLC cell autophagy. Their experiments reveal that both protein and mRNA expression of Met was significantly inhibited. They also observed the inhibition of PI3K/AKT/mTOR signaling pathway These results were validated by overexpression of Met which resulted in the reversal of kaempferol effects on NSCLC cell viability and cell autophagy. They concluded that Kaempferol exerts its anti-NSCLC effect by promoting NSCLC cell autophagy which involves Met and its downstream PI3K/AKT/mTOR signaling pathway. Phytomedicine. 2023 Dec:121:155090. doi: 10.1016/j.phymed.2023.155090.



Interaction between irinotecan and Kangai injection in colorectal tumor-bearing mice

The potential role of medicinal plants in the prevention and treatment of colorectal cancer has been a subject of considerable scientific interest. Various compounds found in medicinal plants, such as phytochemicals, have demonstrated anti-cancer properties in preclinical studies. Chen and colleagues investigated the pre-clinical herb-drug interactions between irinotecan (CPT-11) and Kangai (KA) a Chinese herb injection to provide a reference for their clinical co-administration.



The results of the investigation indicate that KA injection is helpful in two ways, improving the efficacy of CPT-11 and reducing weight loss due to it (CPT-11). Oxymatrine metabolism in rats was reduced as suggested by the C_{max} and AUC_{0-t} of its metabolite, matrine ($p < 0.05$), from 2.23 ± 0.24 to 1.38 ± 0.12 μg/mL and 8.29 ± 1.34 to 5.30 ± 0.79 μg h/mL, respectively. This effect is not likely to compromise the anti-cancer effect of this herb-drug pair due to the similar efficacy of oxymatrine and matrine. The investigation underscores the benefits and risks of this combination and provides a reference for their clinical co-administration. Front Pharmacol. 2023 Nov 29:14:1282062. doi: 10.3389/fphar.2023.1282062.

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