

Soluble and Solid Forms of Curcumin for Pharmaceutical Application

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Technology description

Researchers at TGen have developed a curcumin-2-aminobenzimidazole co-crystal that is water soluble, non-hygroscopic, solid below 118° C, and chemically stable under a range of conditions, temperatures, humidity, ambient light and water with no signs of degradation, disproportion, or loss of crystallinity.

Curcumin is a linear diarylheptanoid and is thought to have antioxidant, anti-inflammatory and anti-carcinogenic properties. Studies have suggested that curcumin is effective against cancers of the breasts, uterus, cervix, prostate, and GI tract, and that it may also be effective against cancers of the blood, brain, lungs, and bladder.

Biological effects of curcumin include:

- Manipulation of cellular division and tumor suppression signalling pathways
- Prevention of tumor metastasis and angiogenesis
- Promotion of apoptosis in cancer cells without affecting healthy tissue
- Increased effectiveness of chemotherapy
- Protection of healthy cells from damage by radiation therapy

Specific bioactivities of curcumin include:

- Inhibition of arachidonic acid metabolism
- Reduction of cytokine levels by blockage of NF-kB signalling
- Interference with synthesis of advanced glycation end products

Additionally, curcumin has been found to inhibit the expression of ICP0, a regulatory protein produced by herpes viruses to promote the transcription of viral genes during infection.

Despite its numerous potential biological activities, the bioavailability of pure curcumin is limited by its hydrophobicity, hygroscopicity, and chemical instability. The curcumin-2-aminobenzimidazole co-crystal developed by TGen is a solid form of curcumin that may be suitable for pharmaceutical use.

Institution

[The Translational Genomics Research Institute](#)

Inventors

[Tong Wang](#)

Drug Development

[Steven Triezenberg](#)

Director

Van Andel Education Institute

[Steve Gately](#)

联系我们



叶先生

电话 : 021-65679356

手机 : 13414935137

邮箱 : yeyingsheng@zf-ym.com