Nano co-delivery of quercetin and alantolactone for colorectal cancer treatment

Quercetin (Q) and alantolactone (A) are two traditional Chinese medicines that have shown a wide spectrum of medical benefits, such as anti-inflammatory and anti-tumor activities. A micelle-based nano-formulation was used to encapsulate these two drugs in a unique ratio (Q:A = 1:4) and to achieve drug delivery to colorectal cancer site, providing optimal drug pharmacokinetics and synergistic therapeutic effect that induced immunogenic cell death (ICD).

It is known that colorectal cancer is resistant to traditional immunotherapy due to microsatellite formation associated with fewer neo-antigen presentation and weak systemic immune stimulation. Although several chemotherapeutic drugs have exhibited immune-modulating effect, the significant side effect inhibited their application in clinic.
University researchers have developed a nanoparticle-mediated immunotherapy that co-delivers quercetin and alantolactone in a certain ratio for the treatment of microsatellite-stable colorectal cancer. This therapy was able to reactivate anti-tumor immunity by inducing ICD, causing cytotoxicity, and modulating immune-suppressive tumor microenvironment.

**Advantages:**
- Micelle-based nano-formulation, allowing for prolonged drug circulation in the blood, as well as increased drug accumulation in the tumor
- Synergistic immunogenic cell death induction, providing immunotherapeutic effect.

**Related Publications:**
- Nanoformulated Codelivery of Quercetin and Alantolactone Promotes an Antitumor Response through Synergistic Immunogenic Cell Death for Microsatellite-Stable Colorectal Cancer
  
  https://pubs.acs.org/doi/10.1021/acsnano.9b02875

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