

Dietary Treatment and Prevention of Folate-Related Pathologies

Invention Summary

This invention relates to methods and formulation to treat and prevent folate-related pathologies such as cancer and birth defects using pharmaceutical or dietary uridine and deoxyuridine.

Technology Overview

Vitamin B9, known as folic acid, is an important vitamin in the B-complex group. It is an essential vitamin to prevent anemia during pregnancy. Folic acid also plays an important role in preventing neural tube closure defects (NTDs) in newborns.

Since folate metabolism is critical for the synthesis of cellular constituents required for cell growth, the risks of NTDs, cardiovascular diseases, neurodegenerative disorders and cancer are increased when it is not functioning properly.

Deoxyuridine and NTD. Folate is commonly prescribed as a prenatal dietary supplement to prevent birth defects, and particularly neural tube defects, however, folate may cause potential adverse effects in some users. In addition, a subpopulation of about 30% of women experience no benefit from receiving dietary folate. Cornell researchers discovered deoxyuridine to be an effective alternative to folate. Deoxyuridine was demonstrated to be highly effective in preventing birth defects in pregnant mice.

Uridine intestinal cancer. The inventor have shown that dietary uridine reduces intestinal tumors by 50% in mouse models of colon cancer ($p < 0.05$). Uridine is safe to intake and can be used as medical food or supplement.

These discoveries represent significant advances in the prevention and treatment of folate-deficiency related pathologies.

Potential Applications

Dietary supplements, nutraceutical or pharmaceutical formulations of deoxyuridine to prevent birth defects such as NTDs, and uridine to treat or prevent colorectal cancer.

Advantages

- Uses nucleotides, deoxyuridine and uridine, that are “downstream” of folic acid
- Deoxyuridine offers protection for groups not responsive to folic acid
- Nutraceutical products do not require FDA approval.

Publications

- PCT [WO201214899](#)
- Martiniova L & al. (2015). Maternal dietary uridine causes, and deoxyuridine prevents, neural tube closure defects in a mouse model of folate-responsive neural tube defects. *Am J Clin Nutr.* 101(4):860-9. doi: [10.3945/ajcn.114.097279](#).

Inventors:

Patrick Stover

Patents:

Filed

Licensing Contact:

Jeff Fearn

607-254-4502

jcf55@cornell.edu

Cornell Reference:

D-5476