C60 Medical Application

Anti-virus application

Chang Liu
2014-09-30
C60 Medical Application: Anti-HIV

C60 is not used to kill the virus, it is used to disturb the protease and reverse transcriptase, HIVP and HIVRT.
Modification of C60

- To use C60, we need to modify its structure.
- C60 is hydrophobic, cannot solute in water.
1. water soluble: participate in virus’ life

2. react-able: form a complex

- the mechanism is form a C60-HIVP complex inhibit function of the protease, complex is formed by Van der Waals contracts and complementary electrostatics, hydrogen bonding also could be helpful.
Water soluble
usual methanofullerene synthesis method
cycloaddition of azomethine ylides
direct nucleophilic cyclopropanation
Form a complex

- Specific geometry
- Size
- Molecular polarity
- Organic functional groups
Summary

- Materials are always useful.
- Structure-properties relationship is important.
- These works start from 1993, but not any news. Potential value is “no guarantee”.
- Even no guarantee, still need new ideas.
- Evolution or revolution?
  — Evolutionary method, revolution idea.
Reference


