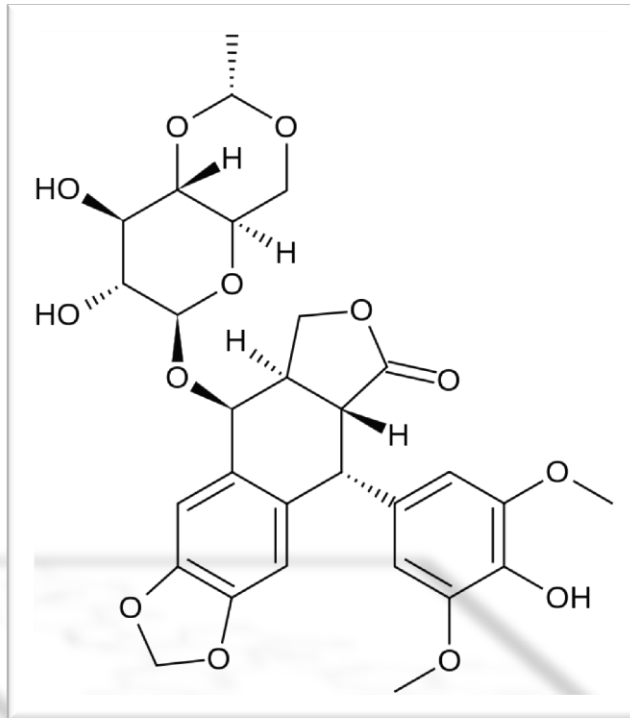


Název: Carbon Nanotubes As Etoposide Nano carrier

Školitel: Amitava Moulick

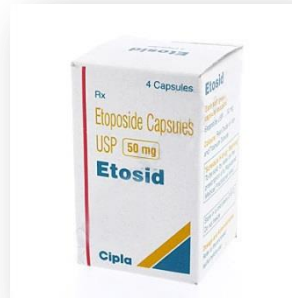
Datum: 23. 01. 2014



- **Etoposide, etoposide phosphate** or **VP-16** (current brand name: **Etopophos**) is a cytotoxic agent (anticancer drug)

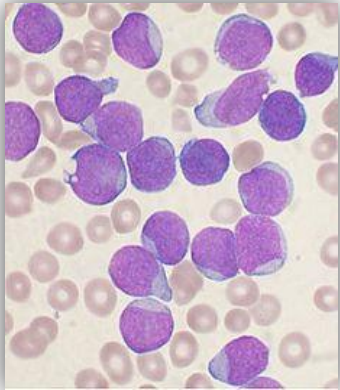
ETOPOSIDE

Administration of Etoposide



It must be done slowly over a 30- to 60-minute period because it can lower blood pressure

Use of Etoposide



Leukemia



Lymphoma



Lung cancer

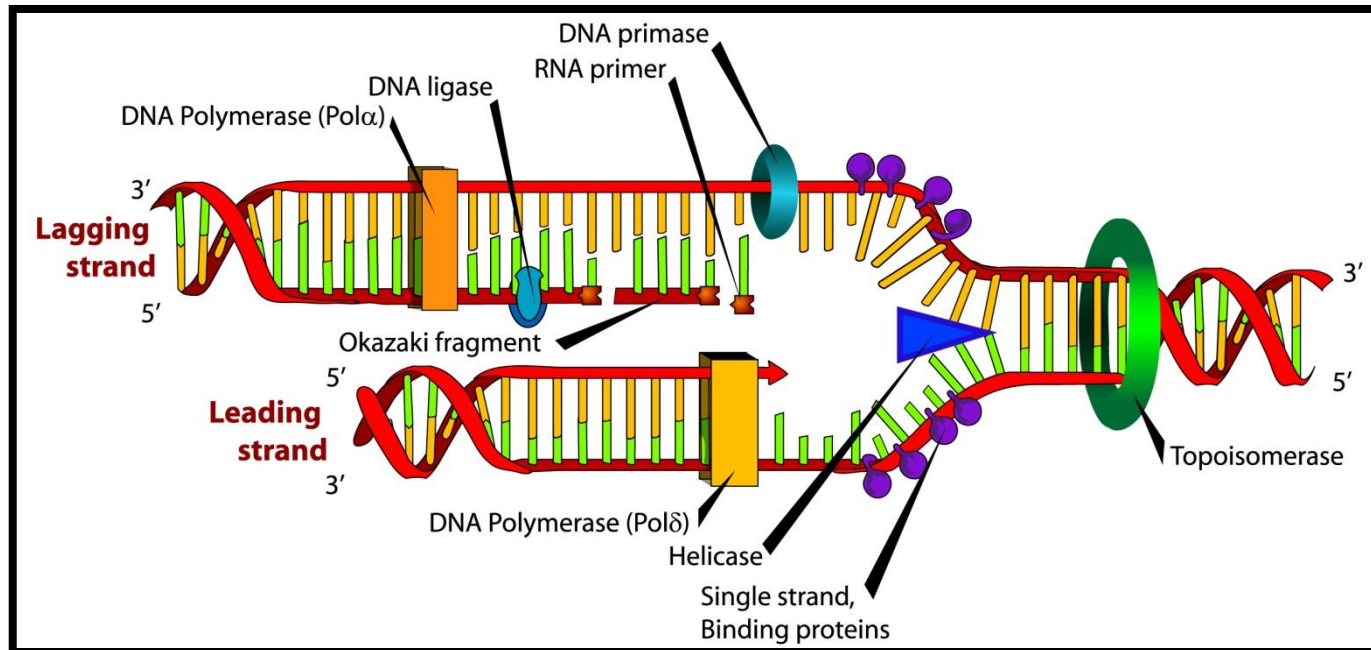


Glioblastoma multiforme



Kaposi's sarcoma

Mode of action



Etoposide belongs to the drug type
Topoisomerase Inhibitor

Mode of action

Etoposide forms a complex with DNA and the **topoisomerase II** enzyme



prevents re-ligation of the DNA strands



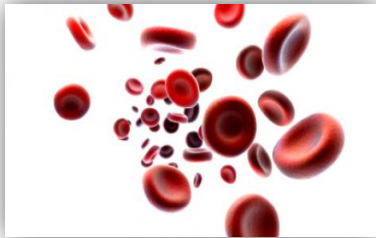
by doing so causes DNA strands to break



Cancer cells rely on this enzyme more than healthy cells, since they divide more rapidly. Therefore, this causes **errors in DNA synthesis** and promotes **apoptosis** of the cancer cell

Side Effects

- Chemotherapy (Etoposide) is most effective at killing cells that are rapidly dividing.
- Unfortunately, chemotherapy does not know the difference between the cancerous cells and the normal cells.
- The "normal" cells will grow back and be healthy but in the meantime, side effects occur.
- The "normal" cells most commonly affected by chemotherapy are the blood cells, the cells in the mouth, stomach and bowel, and the hair follicles.



Low blood counts



Mouth sores



Nausea

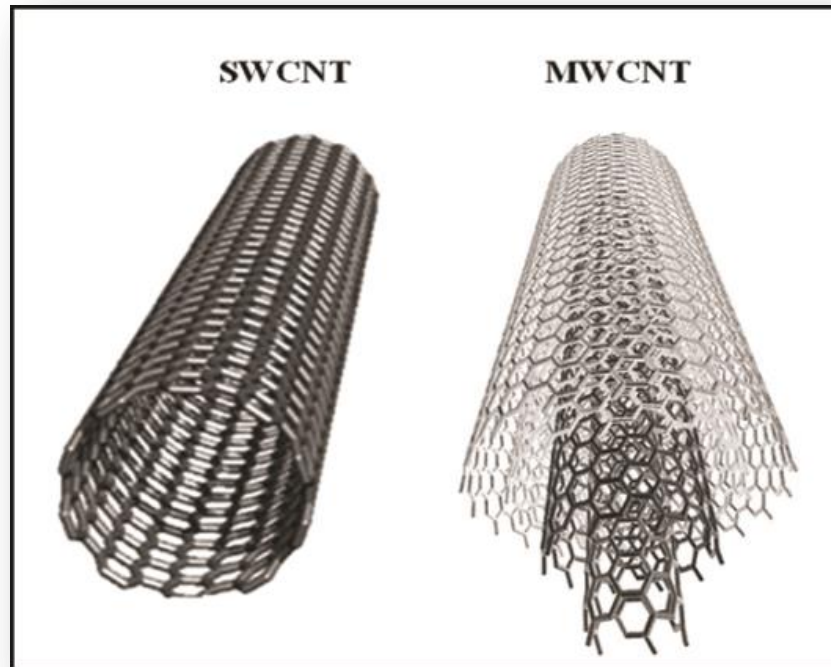


Diarrhea



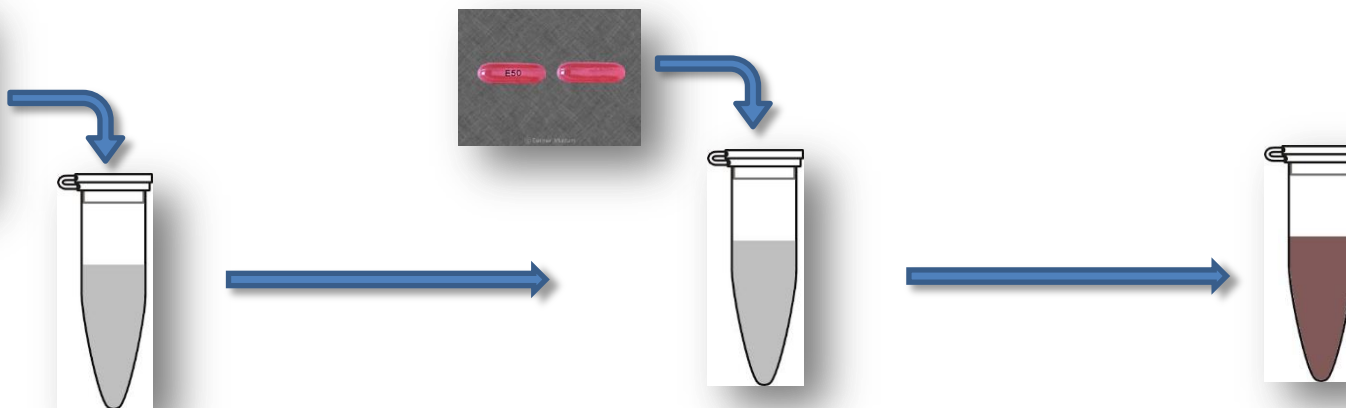
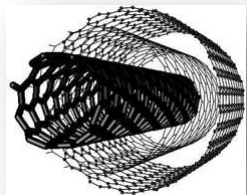
Hair loss

Carbon nanotubes

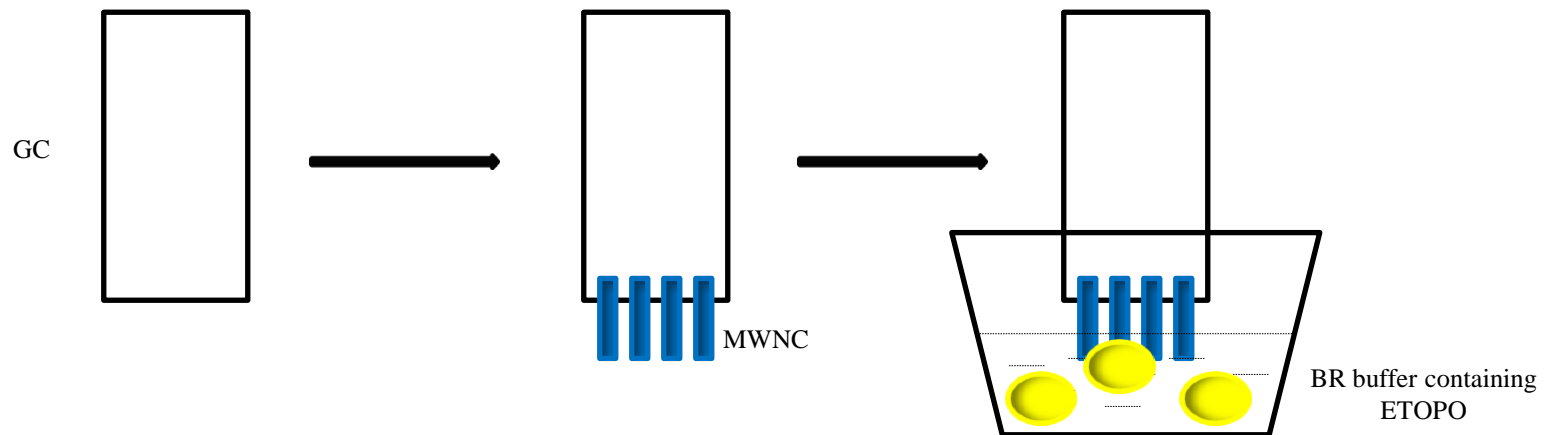
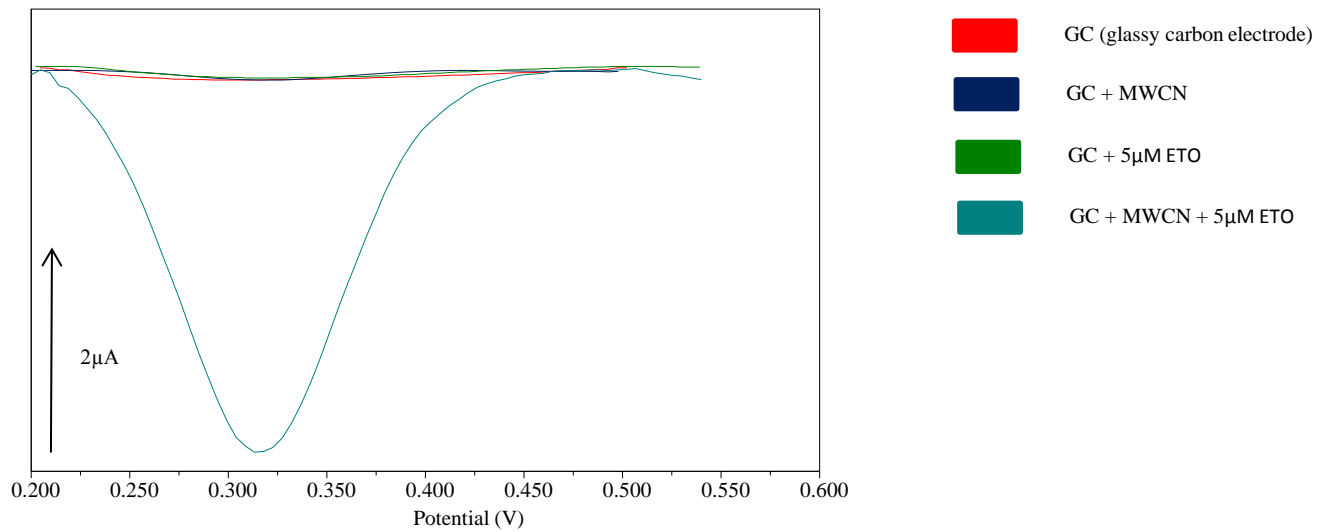


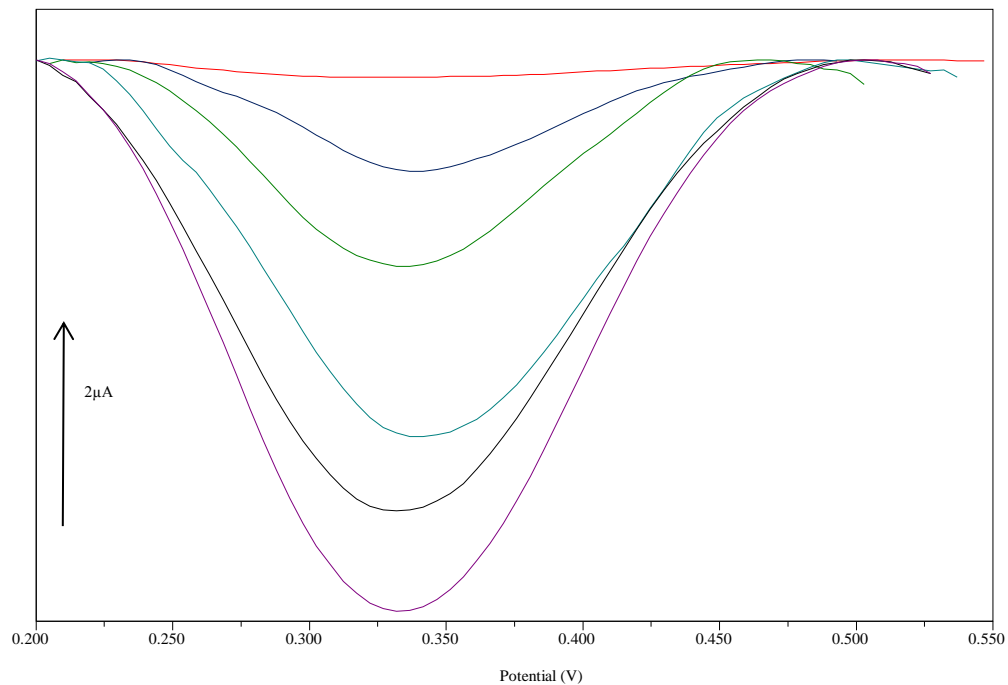
Carbon nanotubes (CNTs) are allotropes of carbon with a cylindrical nanostructure.

Modification of multiwall carbon nanotube with Etoposide

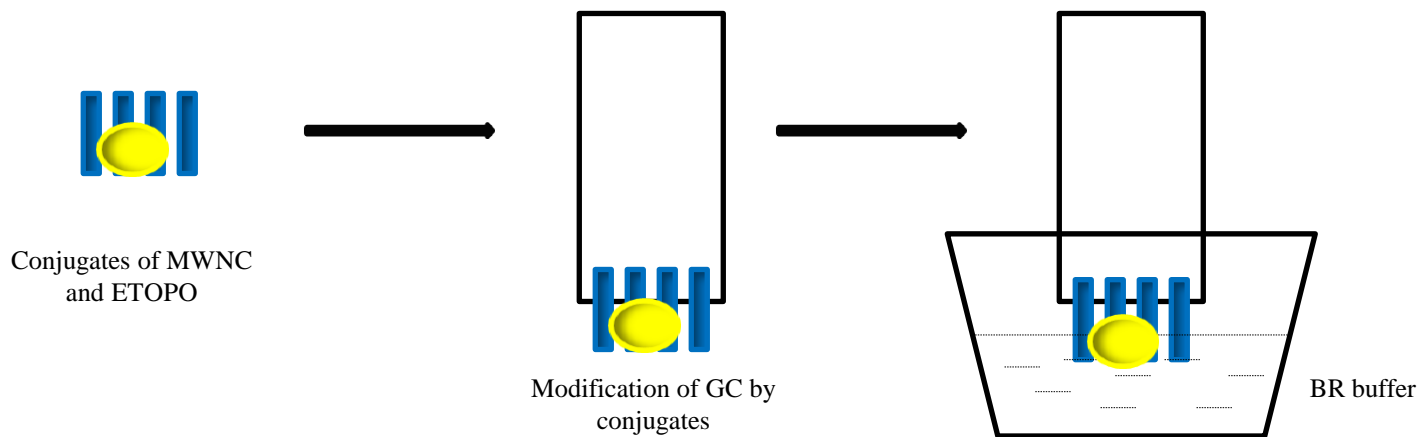


Electrochemical Detection by
Differential pulse voltammetry (DPV)





- GC + MWCN
- ETO 0.9 mM after modification
- ETO 1.8 mM after modification
- ETO 3.6 mM after modification
- ETO 7.2 mM after modification
- ETO 14.4 mM after modification



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Thank you

Reg.č.projektu: CZ.1.07/2.4.00/31.0023

Název projektu: Partnerská síť centra excelentního bionanotechnologického výzkumu