# Nanocells

By Richard A. Lopez

Nanocells are a drug delivery system in which contains chemotherapeutic drugs combined with an anti-angiogenesis drug. Still in the development stage, nanocells are currently being worked on at MIT labs. The purpose of its development is to generally become a drug delivery system for cancer patients. More specifically replace the conventional drugs used to treat liver cancer.

Nanocells are a small particle of 10 to the $-9^{th}$ meters. They are able to pass through blood vessels that contain tumors. There inner shell contains chemotherapy drugs which are used to destroy the cancer cells. Their outer shell contains anti-angiogenesis which prevent the tumor cells from recruiting blood vessels to supply it with oxygen and allow it to spread.

The use of conventional drugs for cancer consists of a handful of medication which are either injected or taken orally. There are numerous problems with using conventional drugs. The drugs may take effect on normal healthy cells, if the cancer is in a specific region the drugs cannot be specified to that area and take a toll on other organs, for it to be effective a patient must undergo a series of the drug and, the use of so many drugs can get to be highly expensive.

The advantages of nanocells have become a dream for many cancer patients who go through the horrors of the disease. Nanocells are equipped with a "stealth" surface which allows them to avoid the immune system. Due to the lack of resistance the drug can be more effective. Nanocells also do not effect healthy cells in which are not cancerous. There are no series injections, it is done once through IV which is not very painful and continues to work till the cancer is removed. The biggest advantage is that they can be directly injected to the target site and due to the extremely small amount of chemotherapy they carry; it is less harmful to the human body. It is also about $55,000 cheaper than the other medications.

It has been proved to be effective and work in cancers such as melanoma and lung cancer in mice. "Once the nanocell is inside the tumor, its outer membrane disintegrates, rapidly deploying the anti-angiogenic drug. The blood vessels feeding the tumor then collapse, trapping the loaded nanoparticle in the tumor, where it slowly releases the chemotherapy"().

Mice treated with the current and best chemotherapy lasted for about 30 days while those treated with the nanocells lived for about 65 days. The only need for improvement will be the different dosages that will have be given for different cancers.

## Works Cited


Cheawtada, Chanokkamon. "Nanocell." 10 Nov. 2009. Speech.

Delude, Cathryn M. "Engineers an anti-cancer smart bomb." *MIT*. 27 July 2005. Web. 10 Nov. 2009. <http://web.mit.edu/newsoffice/2005/nanocell.html>.

Nanocell -." *Wikipedia, the free encyclopedia*. Web. 10 Nov. 2009. <http://en.wikipedia.org/wiki/Nanocell>.