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Nanotechnology kills cancer cells

Nanotechnology is the science of the small; the very small. It is the use and manipulation of matter at a tiny scale. At this size, atoms and molecules work differently, and provide a variety of surprising and interesting uses.

The prefix of nanotechnology derives from 'nanos' – the Greek word for dwarf. A nanometer is a billionth of a meter, or to put it comparatively, about 1/80,000 of the diameter of a human hair.

Nanotechnology has been harnessed to kill cancer cells without harming healthy tissue.

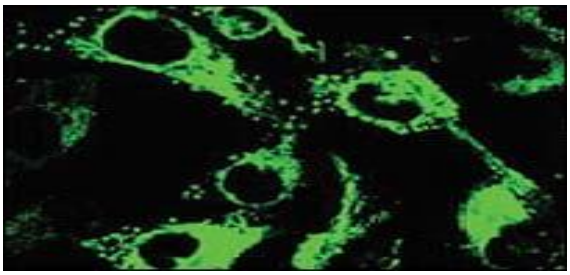
The technique works by inserting microscopic synthetic rods called carbon nanotubules into cancer cells.

When the rods are exposed to near-infra red light from a laser they heat up, killing the cell, while cells without rods are left unscathed.

Researcher Dr Hongjie Dai said: "One of the longstanding problems in medicine is how to cure cancer without harming normal body tissue.

"Standard chemotherapy destroys cancer cells and normal cells alike . That's why patients often lose their hair and suffer numerous other side effects.

"For us, the Holy Grail would be finding a way to selectively kill cancer cells and not damage healthy ones."



Tiny tubes are implanted in cancer cell

The carbon nanotubules used by the Stanford team are only half the width of a DNA molecule, and thousands can easily fit inside a typical cell.

But the Stanford team found that if they placed a solution of carbon nanotubules under a near-infra red laser beam, the solution heated up to about 70C in two minutes. They then placed the tubules inside cells, and found they were quickly destroyed by the heat generated by the laser beam.

The next step was to find a way to introduce the nantubules into cancer cells, but not healthy cells.

The researchers did this by taking advantage of the fact that, unlike normal cells, the surface of cancer cells is covered with receptors for a vitamin known as folate. They coated the nanotubules with folate molecules, making it easy for them to pass into cancer cells, but unable to bind with their healthy cousins.

Exposure to the laser duly killed off the diseased cells, but left the healthy ones untouched.

Source :http://news.bbc.co.uk

Pharma Info Line

Inside This Issue

Lamictal (lamotrigine): Label Change - Risk of Aseptic Meningitis

FDA notified healthcare professionals and patients that Lamictal (lamotrigine), a medication commonly used for seizures in children two years and older, and bipolar disorder in adults, can cause aseptic meningitis. Symptoms of meningitis may include headache, fever, stiff neck, nausea, vomiting, rash, and sensitivity to light. In cases of meningitis, it is important to rapidly diagnose the underlying cause so that treatment can be promptly initiated .

The decision to revise the Lamictal label is based on FDA's identification of 40 cases of aseptic meningitis in patients taking Lamictal (from December 1994 to November 2009). See the Data Summary section of the Drug Safety Communication for additional information.

RECOMMENDATION: Patients should be advised to contact their healthcare professional immediately if they experience signs and symptoms of meningitis while taking Lamictal. If meningitis is suspected, patients should be evaluated for other causes of meningitis and treated as indicated. Discontinuation of Lamictal should be considered if no other clear cause of meningitis is identified.

Source:http://www.fda.gov/Safety/MedWatch

FDA Clears Body-Contouring Laser Treatment

October 4, 2010 — The US Food and Drug Administration (FDA) has granted 510(k) clearance for noninvasive and painless laser treatment that can reduce the appearance of cellulite and help slim specific body areas during a short period. Common treatment areas include the flank abdomen, thighs, stomach, buttocks, and chin.

For each treatment session, low-level laser light is delivered to problem areas via 4 pads placed directly on the skin for approximately 10 to 20 minutes. The light is absorbed into individual adipose cells, temporarily opening cell wall pores to release fat that is then collected by the lymphatic system and transported to body areas where it can be dissolved and released during exercise. A 20- to 30-minute session of cardiovascular-related exercise is recommended immediately .A 20- to 30-minute session of cardiovascular-related exercise is recommended immediately after each session but can be performed up to 12 hours later if necessary; 8 to 10 sessions during a 4-week period are advised for optimal results According to a company news release, the relatively short amount of time required to achieve desired results may help motivate clients to adhere to a regular exercise regimen and healthy diet. The device is being launched in medical, spa, and fitness settings throughout the United States .

Source:www.medscape.com.

Before

After

FDA Approves Oral Contraceptive Containing Folate

September 24, 2010 — The US Food and Drug Administration (FDA) today approved an oral contraceptive — the first of its kind — that is intended both to prevent pregnancy and reduce the risk for neural tube defects in newborns if and when users of the pill give birth.

The new contraceptive, Beyaz (Bayer HealthCare Pharmaceuticals), contains levomefolate calcium, a metabolite of folic acid that helps produce and maintain new cells in the body. Low folate levels in women have been linked with neural tube defects in their children such as spina bifida, resulting in recommendations that women of childbearing age supplement their diet with folate .

"Combining an oral contraceptive with folate is important, because women may become pregnant during [oral contraceptive] use or shortly after discontinuation, possibly before seeking preconception counseling from their healthcare provider," said Dr. Anita Nelson, professor of obstetrics and gynecology at the Harbor–University of California at Los Angeles Medical Center, Torrance, California, in a company press release. "For women who want to use an oral contraceptive, Beyaz offers a new option for women to receive daily folate supplementation."

The approval is based on the already-approved oral contraceptive drospirenone/ethinyl estradiol (Yaz, Bayer HealthCare Pharmaceuticals), which contains the same doses of estrogen and progestin.

The FDA said that the clinical trials of Beyaz did not yield any findings that would suggest it differs from Yaz in terms of its overall safety profile.

Source:

www.medscape.com

Nobel Prize Awarded to Developer of In Vitro Fertilization

October 4, 2010 — It is hard to deny a scientist a Nobel Prize when there are 4 million good reasons.

In the case of Robert Edwards, PhD, who was awarded the 2010 Nobel Prize in medicine or physiology today, the reasons are roughly 4 million people born over the past 32 years due to the therapy he is being honored for — in vitro fertilization (IVF).

The British-born Dr. Edwards worked with the late gynecologist Patrick Steptoe, a British pioneer in laparoscopy, to take IVF from experiment to practical medicine, the Nobel Foundation states in its announcement. On July 25, 1978, the researchers' medical technology bore human fruit when Louise Joy Brown, the daughter of Lesley and John Brown, was the first "test-tube baby" to enter the world.

Dr. Edwards left another lasting mark on reproductive medicine by founding in 1980, along with Dr. Steptoe, the Bourn Hall Clinic in Cambridge, England, the first center for IVF therapy. Gynecologists and cell biologists from around the world have trained there, according to the Nobel Foundation.

Dr. Edwards is now professor emeritus at the University of Cambridge.

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Lack of Sleep During Pregnancy Ups Risk of High Blood Pressure

Oct. 1 (HealthDay News) -- A good night's sleep when you're pregnant may help keep your blood pressure levels normal, new research suggests.

Pregnant women who got less than six hours of nightly sleep during early pregnancy had systolic blood pressure readings in their last trimester that were nearly 4 mm/Hg higher than women who slept nine hours nightly, the study found. And women who got less than five hours of sleep increased their odds of developing preeclampsia -- a serious pregnancy complication related to high blood pressure -- more than ninefold.

On the other hand, getting too much sleep could also be a problem: women who reported sleeping more than 10 hours a night in their first trimester had more than a twofold increase in the risk of developing preeclampsia, according to the study published in the October issue of the journal Sleep.

"Women, in general, need about seven to nine hours of sleep during pregnancy, preferably nine hours. Getting less than that amount can have health affects," said study author Michelle Williams, a professor of epidemiology and global health at the University of Washington, and co-director of the Center for Perinatal Studies at the Swedish Medical Center in Seattle.

"Women generally already know that they're eating well and getting enough exercise for two during pregnancy. Our study suggests that women should also aspire to sleep well for two," said Williams.

But, she added, because the current study is one of the first to show this association, its findings need to be confirmed by other researchers before any recommendations can be made.