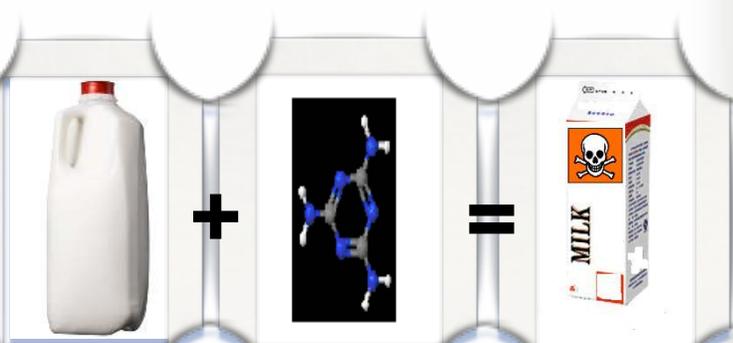


THE LIFE SCIENCE GAZETTE

Murdered With Melamine: First It Was Cats And Dogs... Then It Was Children!

by Dr Catherine Demoliou



In the beginning of 2007, thousands of cats and dogs became sick and died from kidney failure in North America as a result of pet food contamination with melamine and cyanuric acid. Two Chinese firms and an American company were found guilty in court of substituting wheat gluten with melamine contaminated with cyanuric acid in pet food, for bigger profits.

This was not the end of the story for the Chinese. In September 2008, the success of the Olympic Games in China was spoiled by the shocking news that 4 Chinese babies died; almost 13 thousand were hospitalized; 104 with grave renal failure, and as many as 53,000 are now seriously ill because they were given formula milk contaminated with melamine. Here we go again!

Some milk suppliers or manufacturers have been profiteering by adding melamine and possibly cyanuric acid to their water-diluted milk products to inflate protein levels artificially.

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Mediterranean Diet - Connection to Health

5th International Conference of the Cyprus Dietetic Association (www.cydadiet.org)

28-30 November 2008

Hilton Park Hotel, Nicosia Cyprus

Nursing Talks

What do you know about Community Health Nursing?

with Dr Wasileh Petro

Imagine yourself in the following situations:



- Dressed in blue and white, you knock on the door of a residential trailer. You are looking for the mother of an infant who has been hospitalized because of low birth weight. You are there to help the mother prepare her home for the hospital discharge of the infant.

- You are working in a nursing clinic located in a high-rise residence for the elderly. Old people come for blood pressure screening, to inquire whether feeling tired is a side effect of the medication they take for reducing their blood pressure. Or, you might be checking whether their diet this past week has reduced their sodium intake and thus improved their blood pressure.

- Sitting at an office desk, you are telephoning a physiotherapist to discuss the progress of a school-aged child who has mobility problems related to a congenital malformation on his legs.

- At a school meeting, you are participating in a panel discussion on the prevention of human immunodeficiency virus (HIV) transmission. Or you are developing a stress screening and anti-smoking programs for a group of male employees of a large publishing company.

- You may be required to review the statistics for pattern of death in your community and advocating with health officials the value of a hospice (care for terminally ill patients) program.

If you were participating in any or all of these activities... who would you be?

It is likely you would be a Community Health Nurse and you would have specific knowledge and skills in Public Health Nursing. What's the difference between the two types of nursing? Well, in the literature and in practice there is often lack of clarity in the use of these terms. Both the American Nurses Association (ANA, 1980) and the American Public Health Association (APHA, 1980) agree that the type of involvement previously described is a synthesis of "nursing practice" and "public health practice".

The ANA definition of Community Health Nursing:

Community health nursing is the synthesis of nursing practice and public health practice applied to promoting and preserving the health of the population. The practice is general and comprehensive. It is not limited to a particular age group or diagnosis, and it is continuing, not episodic. The dominant responsibility is to the population as a whole, Nursing directed at individuals, families or groups contributes to the health of the total population. The focus of community health nursing is on the prevention of illness and the maintenance of health.

Sources: Smith, Claudia and Maurer Frances (2000) Community Health Nursing: Theory and Practice. W. B. Saunders Company, USA

Research News

Are New Drug Agents Drugs or Money Wasters?

by Dr. Nicolas Stylianides

Look at your right and left hands. They look alike, almost the same. Are they? Well, the fact that your right hand does not fit into your left glove, tell us that they must be different.

In chemistry, substances called enantiomers are mirror images of each other like our left and right hands. And like in the glove example, our body recognizes the enantiomers of a drug as different substances with possible differences in physiological effects. A mixture that contains both enantiomers at a 1:1 ratio is called a racemic mixture.

We have recently seen that many enantiomerically pure substances (i.e. one of the two mirror images) are being separated from their racemate siblings which already have a marketing authorization as pharmaceutical products. These new optically pure substances or the "Aryans" are being marketed as new drugs that are safer to use for the same ailment their racemate mixture was used for already. However, one should know that they pre-existed in the racemate to an extent of 50%. This racemate mixture is the one that obtained the marketing authorization and it was classified as safe after undergoing clinical trials. If it is safe, what is wrong if the inactive enantiomer exists in our tablets? After all we take and inhale chemicals (such as CO₂) that we do not already have to or that have no biological activity in our body.

Is the difference real? Is it just a perception in the mind of a physician? Or is it the multinational pharmaceutical companies misleading us?

"A new drug is around the corner" says the medical representative to the physician but is it really a new drug? Of course not. The R&D company could have isolated the optically active substance from day one. Isolation techniques of enantiomers have been around since Pasteur's time (1800's) and were refined and improved by Sharpless and Jacobsen in the 1980's and 1990's.

Why didn't the R&D company start doing that from the beginning? Well, it probably has to do with money. A new drug, even though not substantially more beneficial, commands a higher price, and therefore more profits. Moreover, the enantiomerically pure drug when patented at a later stage will indirectly extend the racemate rights through a fresh patent, protecting the company that originally developed the drug.

It is up to the physicians under Oath and possibly the patients whether these unnecessarily more expensive products should be consumed.

My opinion, I would not pay a cent more for enantiomerically pure drugs of known pharmaceutical products.

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Murdered With Melamine: First It Was Cats And Dogs...Then It Was Children!

But why melamine and cyanuric acid and how can these chemicals inflate protein measurements?

Melamine (trade name) is a base organic compound ($C_3H_6N_6$) first discovered in the late 19th Century by Justus von Liebig, the father of nitrogen fertilizers. It is used in fertilizers, in polymer resins to stop fires and in making plastic dinnerware. Its high nitrogen level (66% nitrogen by mass) is what gives melamine the analytical characteristics of protein molecules. **Cyanuric acid** is a structural analogue of melamine, it also has a high nitrogen content, and it is formed during the microbial metabolism of melamine or of similar herbicides. Cheaper than melamine, it is commonly used as a chemical stabilizer in swimming pools but it is also used extensively in animal feed production by the Chinese to artificially increase protein levels. Since food protein is measured as total nitrogen present (using the Kjeldahl method), melamine and cyanuric acid can not be detected by this method. Therefore, nobody had been checking for these chemicals in food products for human consumption since nobody suspected that they might be added. Given that neither melamine nor cyanuric acid are toxic by themselves at low doses, scientists had difficulty finding out the precise cause of death in pets following the food scandal in 2007.

What then has poisoned the American pets and the thousands of Chinese babies?

In 2007, a scientist in Canada found that melamine and cyanuric acid can react in the test tube to form crystals. This reaction was proposed as a possible cause of the deaths of cats and dogs by renal failure since their deaths - as shown soon after by USA scientists - were associated with the presence of melamine and cyanuric acid in pet food that they ate. In 2008, the scientists from a manufacturer of detergents in the USA, confirmed that melamine and cyanuric acid do indeed form crystals in the kidneys of animals and that these crystals lead to progressive degeneration of the kidney tubules and to kidney failure.

It has not been proven yet whether, in addition to melamine, cyanuric acid was deliberately added to milk or was a byproduct of bacterial gut metabolism or a melamine contaminant. Furthermore, toxic doses tell us about acute exposure not long term exposure (at least 6 months) as in the case of the Chinese babies. Certainly, based on the scientific evidence, these are ingredients nobody would want in their baby's milk especially in the excessive amounts found in the Chinese Sanlu milk powder products! Considering the scientific evidence available, it does appear that Chinese manufacturers were not only unscrupulous in adding melamine to milk but they didn't even care about its purity! Diluting a food product for bigger profits is highly unethical but adding poison to it can only be considered as murder!

Let this be a lesson: Even if it is considered safe to use food additives at non-toxic concentrations, any impurities introduced during their manufacturing and the possibility that they may interact in our bodies with other food contaminants (environmental) should be causes for concern to all.

Sources:

1. "Identification and Characterization of toxicity of Contaminants in Pet Food Leading to an Outbreak of Renal Toxicity in Cats and Dogs. Dobson RL et al., Toxicol Sci, 2008, 106: 251-262
2. Clinicopathologic, histologic, and toxicologic findings in 70 cats inadvertently exposed to pet food contaminated with melamine and cyanuric acid. Cianciolo RE. et al., J. Amer. Vet. Med. Ass. 2008, 233: 729-737
3. <http://new.asianews.it/index.php?l=en&art=13279>



DID YOU KNOW.... that about 60 to 80 percent of the difference in height between individuals is determined by genetic factors, whereas 20 to 40 percent can be attributed to environmental effects, mainly nutrition.

Source: Molecular biologist Chao-Qiang Lai Dec 11 2006, Scientific American Online.

The Student Voice



George D Georgiou, AFAA Certified Personal trainer and Group fitness specialist is a Human Biology major student from Cyprus at the University of Nicosia . He is giving us an example of a personal fitness program that he has designed.

This particular program was for a woman of age 45, who was overweight and also suffered from chronic lower back problems (Like so many people I have encountered). Her goals were to lose weight, improve general muscle tone and strengthen her midsection so she wouldn't suffer from lower back pains:

Day 1 (e.g. Monday)

General warmup consisting of a low intensity cardiovascular session on a treadmill or stationary bike.

A full upper body workout, working through Major muscle groups first (Chest, Back, Shoulders) followed by arms (1-2 exercises for each muscle group accordingly). The routine would be based on dumbbell or machine exercises. A focus on abdominals and lower back would then follow including floor exercises which would completely work the abdominals (Front and side as well as breathing exercises to help acquire control) and the lower back muscles.

Stretching to prevent blood from pooling and to keep muscles flexible.

Day 2 (e.g. Tuesday)

A single extended duration cardiovascular session, on any aerobic machine (Treadmill, bicycle, elliptical trainer or even a simple jog, joints allowing), followed by stretching. The duration would be anywhere between 20-45 minutes, based on the fitness level, goals and the pulse during exercise.

Day 3 (e.g. Wednesday) would be an 'off' day allowing for the muscular, cardiovascular and nervous systems to recuperate.

Day 4 (e.g. Thursday)

Day 4 would resemble Day 1, except the routine would be a lower body one, focusing on hips, thighs and the lower leg. The warm up, midsection work and stretching would be similar accordingly.

Day 5 (e.g. Friday)

Day 5 would be identical to day 2, except that another form of cardiovascular exercise may be chosen.

This is what the program would look like for roughly a month, before moving on to a program which specializes more on the muscular system, while maintaining cardiovascular health. If you like, this program may be considered an 'acclimatisation' program, and is flexible enough to have certain days swapped around. The week has 7 days, the program has 4, so as long as the 4 days are accommodated throughout the week, the program is satisfied. In this particular situation, after a couple of months, the client had lost about 10 Kg and was already experiencing less back pains.



Ask Andrea Editorial

Dear readers,

I proudly present you the third issue of our Life Science Gazette.

Whether you are interested in chemistry or nursing, or you just like to keep fit, this is the issue you definitely should read!

As you know Christmas holidays are very near and we would like to give a festive tone to our newsletter. So if there are any creative ideas, ads or suggestions you think you might have, drop us a line.

Enjoy!

Andrea Pavlou

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