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Your Gateway to Better Health!

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The terms "glycemic index" and "glycemic load" are very much in the nutritional and medical news these days. The glycemic index has been around for a while and is an indication of how quickly a carbohydrate food releases its glucose content into the blood stream. Glycemic load, on the other hand, is relatively new and was introduced in 1997 by researchers at Harvard University. It is the product of the amount of available carbohydrate in a standard serving of the food and the glycemic index of the food. Many studies have found that a low glycemic index diet lowers the risk of cardiovascular disease, heart attacks, diabetes, colon cancer, breast cancer, and prostate cancer.

Thus it would seem prudent to aim for a diet with a low glycemic load, bearing in mind that many foods with a low glycemic load are very high in fats.

Also in this issue, C-reactive protein (CRP) levels can help predict the risk of sudden cardiac death 10 years before the event, new proof that vitamin E prevents atherosclerosis, fish oils may help combat depression, and Alzheimer's disease is associated with oxidative stress and antioxidant deficiency.

*Yours in health,
Hans Larsen, Editor*

October Highlights

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from the liver. I am not aware of any research suggesting that fish oils aggravate gout or kidney stones. Fish oils actually benefit arthritis patients so there is a good chance that they may also work for gout.

What would be the effects of too much folic acid as per the range indicated on most blood test results, and what would cause this result in a person's test assuming the only supplement one takes is around 400 mcg/day?

ZGZ, USA

LETTERS TO THE EDITOR

I would like to know if fish oil is extracted from the flesh of the fish versus cod liver oil coming from the liver. Does fish oil contain purines and if so, will it aggravate gout or kidney stones?

JB, USA

Editor: *Fish oils are extracted from the tissue (flesh) of fatty fish while liver oils are extracted*

Editor: *I am not aware of any side effects of having a high folate level. Folate concentration, in animals at least, is controlled by the liver. So an excessively high level despite a normal intake could perhaps indicate a fault in liver metabolism. This, I hasten to add, is pure speculation on my part; I have seen nothing in the medical literature to substantiate it*

My daughter has been trying to get pregnant. Have any studies been made with fish oil and women trying to conceive?

GS, USA

Editor: *I don't believe fish oils aid in becoming pregnant; however, there is some evidence that supplementation with vitamin B12 and folic acid (for both partners) may be helpful.*

ABSTRACTS

New table for glycemic index and load

SYDNEY, AUSTRALIA. Researchers at the University of Melbourne have compiled an impressive listing of the glycemic index and glycemic load of more than 750 different types of food. The glycemic index (GI) is an indication of how quickly a carbohydrate food releases its glucose content into the bloodstream. It is determined by comparing blood glucose levels after ingesting the test food with blood glucose levels after ingesting a similar amount of pure glucose or white bread. In 1997 researchers at Harvard University introduced the concept of glycemic load. Glycemic load is the product of the amount of available carbohydrate in a standard serving of the food and the glycemic index of the food. Glycemic indices, on the white bread scale, vary from 147 for pure glucose

(white bread = 100) to 10 for peanuts while glycemic loads (per standard serving) vary from 60 for some types of rice to 2 for yogurt. Several studies have shown that the chronic consumption of a diet with a high glycemic load is associated with an increased risk of developing cardiovascular disease, type 2 diabetes, and certain cancers.

Foster-Powell, Kaye, et al. International table of glycemic index and glycemic load values: 2002. American Journal of Clinical Nutrition, Vol. 76, July 2002, pp. 5-56

Editor's comment: This new table is a must for dietitians and anyone interested in achieving and maintaining optimum health. It needs to be used with caution though. Many foods with a low glycemic load are very high in fats.

Potassium salt helps prevent bone loss

SAN FRANCISCO, CALIFORNIA. There is ample evidence that a high salt diet contributes significantly to the bone loss experienced by postmenopausal women. Sodium chloride (salt) accelerates the loss of calcium in the urine ultimately leading to osteoporosis and hip fractures. Researchers at the University of California now report that potassium citrate neutralizes this effect of a high salt diet.

Their clinical trial involved 52 postmenopausal women who were maintained on a low sodium diet (87 mmol/day sodium [2000 mg/day]) for three weeks and then switched to either a high salt diet (225 mmol/day sodium) + placebo or the high salt diet + 90 mmol/day of potassium citrate for another four weeks. Urine calcium excretion, urine N-telopeptide, and serum osteocalcin levels were measured at the beginning and end of the experiment. N-telopeptide is a measure of bone loss and serum osteocalcin provides an indication

of bone formation. After four weeks on the high salt + placebo diet urinary calcium excretion had increased by 42 mg/day compared to a decrease of 8 mg/day in the high salt + potassium citrate diet. N-telopeptide level in the high salt + placebo diet increased by 6.4 as compared to an increase of only 2.0 in the potassium citrate group. Osteocalcin levels were not significantly different between the two groups.

The researchers conclude that the addition of potassium citrate to a high salt diet prevents the increased calcium loss and bone turnover caused by the high salt diet. They estimate that the amount of potassium citrate used in the experiment can be obtained by consuming 7 to 8 servings of potassium-rich fruits and vegetables each day. They also point out that alkaline salts of potassium reduce internal acid production and increase blood pH and plasma bicarbonate concentration.

Sellmeyer, Deborah E., et al. *Potassium citrate prevents increased urine calcium excretion and bone resorption induced by a high sodium chloride diet.*

Journal of Clinical Endocrinology & Metabolism,
Vol. 87, May 2002, pp. 2008-12

New test predicts sudden cardiac death

BOSTON, MASSACHUSETTS. About half of the 500,000 deaths occurring in the United States every year due to coronary heart disease happen suddenly. For half the victims of sudden cardiac death (SCD) death is the first indication that anything was wrong with their heart. A group of researchers from the Harvard Medical School, Massachusetts General Hospital, and Brigham and Women's Hospital now report the discovery of a marker that may predict the risk of SCD almost 10 years prior to an event actually occurring.

The researchers analyzed blood samples from 97 SCD victims and compared the results to those of 192 matched controls. All participants were part of the large Physicians' Health Study and had been followed since 1982. The researchers observed a highly significant difference in the blood level of C-reactive protein (CRP) between the two groups. The SCD victims had average CRP levels of 0.17 mg/dL (1.7 mg/L) as compared to the controls at 0.10 mg/dL (1.0 mg/L). It was also clear that participants with CRP levels above 0.44 mg/dL (4.4 mg/L) had almost three times greater risk of SCD than did

those with levels of 0.04 mg/dL (0.4 mg/L) or less. Homocysteine and cholesterol levels were not significantly related to the risk of SCD once the data had been adjusted for other cardiac death risk factors (hypertension, diabetes, smoking, etc.). There was a slight, but statistically non-significant trend for a high ratio of total cholesterol to high-density cholesterol (HDL) to be indicative of a higher SCD risk. Going from a ratio of 3.3 or less to a ratio of 6.3 or more approximately doubled the risk, but this correlation became statistically insignificant once the other risk factors were accounted for. The researchers conclude that testing for CRP levels may improve the physician's ability to predict SCD and advise the patient to take "evasive" action.

*Albert, Christine M., et al. Prospective study of C-reactive protein, homocysteine, and plasma lipid levels as predictors of sudden cardiac death. **Circulation**, Vol. 105, June 4, 2002, pp. 2595-99*

*Spooner, Peter M. and Zipes, Douglas P. Sudden death predictors – an inflammatory association. **Circulation**, Vol. 105, June 4, 2002, pp. 2574-76 (editorial)*

Vitamin E protects against atherosclerosis

NAPLES, ITALY. There is general agreement that oxidative stress is involved in the formation of the early lesions initiating atherosclerosis and subsequent heart disease. Researchers at the Federico II University in Naples now report that a low vitamin E intake is associated with an increased incidence of atherosclerotic plaque in the coronary arteries. Their study involved 310 healthy women (aged 30 to 69 years) who underwent ultrasound (B-mode) evaluation to detect early signs of carotid atherosclerosis. The women also completed food frequency questionnaires and their blood plasma concentrations of vitamin E, vitamin C, vitamin A and carotenoids were measured. None of the women were taking vitamin supplements, but obtained their vitamin E mainly from fresh vegetables, legumes, and olive oil.

The researchers found that 66 per cent of the women had atherosclerotic plaques located at the common carotid artery, the carotid bifurcation (branching point) or both while the remaining 34 per cent had no plaques. There was a clear inverse correlation between the presence of plaques at the carotid bifurcation and vitamin E intake. Women with an intake of 8 mg/day or more of vitamin E were almost three times (OR=2.79) less likely to have plaques than were women with an intake below 5.8 mg/day. A low ratio of plasma vitamin E to cholesterol was also found to be a significant risk factor for the presence of atherosclerotic plaque. No association was found between plaque presence and intake or plasma concentrations of vitamin A, vitamin C or carotenoids.

The researchers acknowledge that some studies have found no protective effect of vitamin E in

patients who already have cardiovascular disease. They believe this is because vitamin E acts by preventing initial plaque formation, but has little effect once the atherosclerotic process is well underway.

Iannuzzi, Arcangelo, et al. Dietary and circulating antioxidant vitamins in relation to carotid plaques in middle-aged women. American Journal of Clinical Nutrition, Vol. 76, September 2002, pp. 582-87

Glycemic index in health and disease

TORONTO, CANADA. A team of researchers from Canada, France and Sweden presents an excellent overview of the current knowledge regarding the association between health and glycemic index (GI). The glycemic index is a measure of the speed at which a carbohydrate food releases its glucose content into the bloodstream. A more recently developed indicator, glycemic load, is a measure of the total glucose load associated with a standard serving of a carbohydrate food. Food with low GIs results in a slower absorption of glucose from the small intestine, which in turn reduces the postprandial rise in gut hormones and insulin. This effect is believed to be behind the many beneficial effects of a low GI diet. Two studies have shown that a low GI diet results in higher HDL cholesterol levels and may reduce cardiovascular disease risk. Another study showed that a low GI diet reduces heart attack risk. Several studies have

found an inverse relationship between GI and the development of diabetes, colon, breast and prostate cancers. Low GI diets may reduce oxidative stress by minimizing the depression of vitamin E and lycopene levels caused by the postprandial rise in glucose levels. The researchers conclude that GI control may have an important role to play in the prevention and treatment of chronic disease.

Two American researchers disagree with this conclusion and believe it is premature to recommend that the general population avoid foods with a high glycemic index.

Jenkins, David J.A., et al. Glycemic index: overview of implications in health and disease. American Journal of Clinical Nutrition, Vol. 76 (suppl), July 2002, pp. 266S-73S

Pi-Sunyer, F. Xavier. Glycemic index and disease. American Journal of Clinical Nutrition, Vol. 76 (suppl), July 2002, pp. 290S-98S

Oxidative stress and Alzheimer's disease

PERUGIA, ITALY. Oxidative stress occurs when the body's antioxidant defenses are unable to cope with the free radical attacks and oxidation reactions taking place in the body. There is a great deal of evidence that suggests that oxidative stress plays a crucial role in the initiation and progression of Alzheimer's disease (AD).

A team of medical researchers from Italy, Germany and the USA now reports that they have found further evidence of oxidative stress in Alzheimer's disease. They measured the level of 8-hydroxy-2'-deoxyguanosine (8-OHdG), a marker of oxidative damage to DNA, in white blood cells taken from 40 elderly Alzheimer's patients and from 39 age- and sex-matched controls. They also measured blood plasma levels of vitamin A, vitamin C, vitamin E, and carotenoids in all participants. The level of 8-OHdG was found to be 76 per cent higher in the

AD patients than in the controls. Antioxidant levels were significantly lower in the AD patients with vitamin C levels being 43 per cent lower, vitamin E 20 per cent lower, lycopene 60 per cent lower, and beta-cryptoxanthin 90 per cent lower. The researchers also found a significant inverse relationship between 8-OHdG level and the plasma levels of lycopene, lutein, alpha-carotene and beta-carotene in Alzheimer's patients but not in the controls.

The researchers speculate that the low antioxidant levels may be caused by the fact that AD itself generates large amounts of free radicals. Other research has shown that supplementation with vitamins C and E reduces the risk of developing dementia and AD.

Mecocci, Patrizia, et al. Lymphocyte oxidative DNA damage and plasma antioxidants in Alzheimer disease. Archives of Neurology, Vol. 59, May 2002, pp. 794-98

Stress in the work place

STOCKHOLM, SWEDEN. The 2002 European Week for Safety and Health at Work will focus on work-related stress. Work-related stress is common in the 15 European Union member states. Out of the 160 million workers in the Union 40 per cent report having monotonous tasks, 60 per cent complain of too tight deadlines, and 56 per cent complain of having to work very quickly. Work-related stress is reflected in a litany of health complaints. Thirty-three per cent of the work force (53 million workers) complains of backache, 23 per cent of neck and shoulder pains, 23 per cent of fatigue, 15 per cent of headache, and 28 per cent of "stress". It is estimated that work-related stress disorders cost the European economy about \$265 billion annually.

Dr. Lennart Levi, Professor of Psychosocial Medicine at the Karolinska Institute, points out that every working individual is at risk for work-

related stress. He says, "Every person has his or her breaking point." Dr. Levi emphasizes that the implementation of some rather basic management principles can go a long way in reducing work-related stress. Among them are:

- allowing adequate time for the worker to perform his or her work satisfactorily;
- providing the worker with a clear job description;
- rewarding the worker for good job performance;
- providing ways for the worker to voice complaints and have them considered seriously and swiftly.

Levi, Lennart. Spice of life or kiss of death? European Agency for Safety and Health at Work Magazine, No. 5, 2002, pp. 11-13

Second hand smoke and feline cancer

AMHERST, MASSACHUSETTS. Feline malignant lymphoma is a common disease among domestic cats. Examination of the structure of the cancerous cells involved has shown them to be very similar to those found in human non-Hodgkin's lymphoma. Researchers at the University of Massachusetts and Tufts University School of Veterinary Medicine have just released the results of a study which concludes that cats exposed to cigarette smoke are two to three times more likely to develop malignant lymphoma than are cats that live in smoke-free homes.

The study involved 80 cats (average age of 11 years) diagnosed with malignant lymphoma and 114 controls who all had renal disease. There are no known links between renal disease and malignancy. The researchers found that cats that

had been exposed to indoor cigarette smoke had a 2.4 times higher incidence of lymphoma. The risk increased with the length of exposure with cats having been exposed for five years or more having a 3.2 times higher risk than cats living in a smoke-free home. The amount of smoking was also a significant risk factor. Cats living in homes in which a pack or more of cigarettes was smoked per day had a 3.3 times greater risk.

The researchers conclude that second hand smoke is a significant risk factor in feline lymphoma and urge further research to investigate a possible connection with human non-Hodgkin's lymphoma.

Bertone, Elizabeth R., et al. Environmental tobacco smoke and risk of malignant lymphoma in pet cats. American Journal of Epidemiology, Vol. 156, August 1, 2002, pp. 268-73

Vitamins C and E prevent lipid peroxidation

BALTIMORE, MARYLAND. There is ample evidence that lipid peroxidation (oxidation of fats) is an important contributor to atherosclerosis, particularly in the early stages. The extent of lipid peroxidation can be determined by measuring the amount of F2-isoprostanes in the urine. F2-

isoprostanes are formed in the body by free radical catalyzed peroxidation of arachidonic acid. A team of American and Australian researchers reports that both vitamin C and vitamin E markedly reduce the formation of isoprostanes. Their study involved 184 non-smoking men and women who were randomized to receive either

500 mg/day of vitamin C (ascorbate), 400 IU/day of synthetic vitamin E (alpha-tocopheryl-acetate), 500 mg/day of vitamin C + 400 IU of vitamin E or a placebo for a two-month period.

The researchers observed a marked reduction in urinary isoprostanes in the groups taking vitamin C, vitamin E or vitamin C + vitamin E. The reduction in the vitamin C + vitamin E group was, however, no greater than the reduction observed in the groups taking vitamins C and E separately. This would indicate that the two vitamins do not act synergistically in reducing lipid peroxidation.

The researchers also observed that vitamin C, but not vitamin E, significantly increased the blood serum's capacity to resist oxidative damage (ORAC value). They conclude that both vitamins C and E markedly reduce lipid peroxidation, an important precursor of atherosclerosis.

Huang, Han-Yao, et al. Effects of vitamin C and vitamin E on in vivo peroxidation: results of a randomized controlled trial. American Journal of Clinical Nutrition, Vol. 76, September 2002, pp: 549-55

Health benefits of walking

BOSTON, MASSACHUSETTS. While there is considerable evidence that vigorous physical activity protects against heart disease there is much less evidence that a daily walk does likewise. Researchers at the Harvard Medical School have just released the results of a study aimed at investigating the effects of walking on heart disease risk. Their study included 73,743 postmenopausal women who were between the ages of 50 and 79 years at enrollment. During an average 3.2 years of follow-up there were 345 newly diagnosed cases of coronary heart disease, 309 strokes, and 1551 first cardiovascular events among the study participants.

The researchers found that brisk walking and vigorous exercise for at least 2.5 hours/week were equally protective against heart disease. Both reduced the risk by about 30 per cent. This risk reduction was independent of age, race, and

body mass index and was enhanced with increasing duration and intensity of exercise. The researchers also found that the risk of cardiovascular disease increased markedly with the amount of time spent sitting or lying down. Women who spent 12-15 hours a day lying down or sleeping had a 38 per cent higher risk while women who spent 16 hours or more every day sitting down had a 68 per cent greater risk than those only sitting down for 4 hours or less.

The researchers conclude that moderate intensity exercise, such as walking, confers significant cardiovascular benefits in postmenopausal women.

Manson, JoAnn E., et al. Walking compared with vigorous exercise for the prevention of cardiovascular events in women. New England Journal of Medicine, Vol. 347, September 5, 2002, pp. 716-25

Fish oils: A cure for depression?

WASHINGTON, DC. On a worldwide basis more working days are lost to depression than to any other illness. The incidence of depression is growing with people born within the last 50 years being twice as likely to suffer from it than were their parents. Dr. Joseph Hibbeln of the National Institutes of Health believes that the reason for the increase in depression can be directly attributed to a major shift in dietary patterns, specifically fat intake. He points out that the vast increase in the use of soy, corn, palm and cottonseed oils in the last 100 years has totally changed the traditional ratio of omega-6 to omega-3 fatty acids in the diet. Soy oil consumption in the US, for example, has increased thousand-fold in the last 100 years

helping to skew the omega-6 to omega-3 ratio from about 1:1 to today's 16:1. This, Dr. Hibbeln believes, spells trouble. The brain consists pretty well entirely of fat so clearly one's fat intake could affect one's brain composition, particularly the ion channels which channel signals in and out of the brain. There is also evidence that low levels of omega-3 fatty acids are associated with low levels of the mood hormone serotonin. Dr. Hibbeln's hypothesis is supported by the fact that the incidence of depression is considerably lower in countries with a high fish consumption.

Fish, particularly fatty ocean fish, is an excellent source of omega-3 fatty acids and its frequent consumption would help to nudge the ratio back towards the optimum 1:1. At least three clinical

trials have observed a marked improvement in depressed patients given relatively high doses of fish oils. This has spurred other scientists to look closer at the potential benefits of fish oil supplementation. At the moment there are at least 10 clinical trials underway evaluating fish oils in the treatment of depression, attention deficit disorder, and schizophrenia.

Small, Meredith F. The happy fat. New Scientist, August 24, 2002, pp. 34-37

Editor's comment: Daily supplementation with 1-3 grams of a high quality fish oil is entirely safe and may not only improve your mood, but help protect you from heart disease, stroke and arthritis as well. For more information on the benefits of fish oils check out www.oilofpisces.com.

Iron controversy continues

MUNICH, GERMANY. Several studies have concluded that a high blood level of iron (high plasma ferritin value) increases the risk of cardiovascular disease and in particular, heart attacks. Other studies have found no such connection. A team of German, Dutch and Norwegian researchers has reviewed the available evidence and concludes that, "there is ample reason to suspect an iron-related cardiovascular hazard." They point out that high iron concentrations cause oxidative stress, a recognized risk factor for cardiovascular disease. They agree with the US Food and Nutrition Board which recently cautioned that a possible risk of liver damage and heart disease make it "prudent to recommend that men and postmenopausal women avoid iron supplements and highly fortified foods."

Dr. Christopher Sempos of the State University of New York points out that iron deficiency is common in the US, especially among toddlers, adolescents and women of childbearing age. He does not support the idea of ending iron fortification or encouraging blood donation in order to prevent heart disease.

Schumann, Klaus, et al. Tolerable upper intakes for dietary iron set by the US Food and Nutrition Board. American Journal of Clinical Nutrition, Vol. 76, September 2002, pp. 499-500

Sempos, Christopher T. Do body iron stores increase the risk of developing coronary heart disease? American Journal of Clinical Nutrition, Vol. 76, September 2002, pp. 501-503

Editor's comment: While the jury is out on this I would suggest that men and postmenopausal women refrain from iron supplementation and that children and young women only supplement if there is a diagnosed need to do so.

NEWSBRIEFS

Eat less and live longer. Experiments have shown that laboratory mice and rats tend to live longer, as much as 50 per cent longer, if their diet is calorie restricted. The calorie restriction is accompanied by lower average body temperatures, lower insulin levels and less age-related decline in the level of the hormone DHEAS. Preliminary trials have shown that the same changes accompany calorie restriction in rhesus monkeys. Researchers at the National Institutes of Aging now believe that humans are similarly affected by calorie restriction. After studying a group of men who had participated in the Baltimore Longitudinal Study on Aging since 1958 they conclude that men with lower body temperature, lower insulin levels or higher DHEAS level do tend to live longer. *New Scientist, August 10, 2002, p. 16*

Cat litter and sea otters. Southern sea otters, an endangered species, inhabit the ocean off the coast of California. Recently they have been dying in record numbers. A team of researchers at the University of California believes they have found the culprit. They found signs of the parasite *Toxoplasma gondii* in 60 per cent of dead sea otters and in 40 per cent of live ones. *T. gondii* is usually carried by cats and the researchers suspect that the new innovation of "flushable" kitty litter is responsible for increasing the concentration of *T. gondii* in the ocean. *T. gondii* is not removed by sewage treatment. The researchers urge cat owners not to flush the kitty litter down the toilet, but rather put it in a plastic bag and dispose of it with their garbage. *New Scientist, August 31, 2002, pp. 42-43*

US to certify GM-free products. The European Union and many other countries oppose genetically modified foods because of concerns about possible long-term health effects. This has hurt exports of corn and soybeans from the US. Although the US Department of Agriculture has long resisted the idea of labeling or even segregating GM products it seems that they have finally realized that you can't force someone to eat something they don't want to eat. The Department is now considering setting up a voluntary certification scheme under which it would guarantee that proper procedures have been followed to ensure segregation all the way from planting to final shipment to the customer. Presumably the GM products and non-segregated products would continue to be sold in the US and Canada.

New Scientist, August 17, 2002, p. 11

Smoking and crib death. There is evidence that exposure to cigarette smoke is associated with a greater risk of sudden infant death syndrome (crib death). A team of French and Swedish researchers has now discovered the connection. They believe that crib death occurs when babies who go into sleep apnea fail to wake up and begin breathing again. This failure to resume breathing is likely caused by the fact that nicotine blocks the receptor for the neurotransmitter acetylcholine that, among other tasks, is involved in regulating breathing.

New Scientist, September 14, 2002, p. 17

Water facts. More than one billion people do not have access to safe drinking water. This and the increasing trend to dam rivers for power

generation may, in the opinion of Kofi Annan, the UN Secretary General, lead to future "water wars". Water was a hot topic at the recent Johannesburg summit. Some facts about this most precious commodity as revealed at the summit:

- Typical daily water consumption of a person in the developing world is 20 liters. Each delegate at the summit used 200 liters per day.
- Half of all hospital beds are occupied by people with water-borne diseases.
- Many women and girls in rural Africa spend 3 hours each day just to collect water.

The delegates at the summit agreed to halve the number of people without clean drinking water by the year 2015, but presented no plan for how to accomplish this goal.

New Scientist, September 7, 2002, pp. 10-11

Drug nanotechnology. A team of Australian researchers has developed a new process for making very fine particles of insulin. The particles are so fine that it may be possible to deliver the drug through skin patches or inhalers instead of by injection. The fine particles (50-100 nanometers across) were found to be three times as effective as regular insulin and acted on the body for twice as long. Nanomized (fine particle) insulin, because of its greater effectiveness, could help relieve the current worldwide shortage of insulin in developing nations.

New Scientist, September 7, 2002, p. 19

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