**Raymond Peat, Ph.D**.

**Water Retention**

2011, KMUD

(Transcribed by sueq)  
  
Topic: Salt, inflammation and diuretics  
  
***Q:*** *Please describe your professional and academic background.*  
**RP:** I studied biology and physiology at the University of Oregon and have taught various hormone and nutrition related courses as well as in other fields, psychology and philosophy included.  
  
***Q:*** *So your main interests are around looking into hormones and much of your research has given you new insights into the treatment of many situations and conditions with hormones like progesterone and pregnenolone and others. I think we should start with modern diuretics. We come into contact with people who for one reason or another are using diuretics to decrease water retention whether it’s ankles, fingers or cardiac water retention. Are there any safe diuretics that are prescription medications in the way that they act?*  
**RP:** Yes there are some that are relatively safe but obviously it’s the whole theory behind why they exist that is the problem. Mercury compounds used to be used, basically they just kill the kidney cells and let stuff leak out and they were the common diuretics for a very long time until the 1950s. New compounds came on the market that had a variety of effects on the kidneys and it was really the promotion of those that created an ideology that diuretics are really key to treating heart disease and several other problems such as toxaemia of pregnancy. But really I think it’s just a marketing strategy to orient physiology around making the kidneys leak out more water. The real problem is what causes the water retention, and almost anything that seriously injures the organism causes water retention, like a problem following surgery very often is that the person stops forming urine, and shock, any very serious sicknesses are going to in many ways cause the reduced ability to form urine properly. And it’s sort of a plumber’s approach to physiology, to think of just opening up the kidneys and letting the liquid out faster.  
  
***Q:*** *So from a herbal perspective, dandelion leaf, and the root is a little bit less effective than the dandelion leaf, but it works as a diuretic and that’s what I thought they had created furosemide from. Although I know with furosemide you have to have a prescription of potassium along with it and dandelion leaf or most green leaves have a lot of potassium so it works out that you don’t need to take potassium if you use dandelion leaf as a diuretic. But would you consider furosemide as a safe diuretic?*  
**RP:** It’s got a long history of use, and it probably does have an actual beneficial effect on survival, but with almost any leaf extract, the potassium and magnesium are going to have a diuretic effect that is probably safer than the actual function on the kidneys.  
  
***Q:*** *So the inflammation in the first place is the main cause in many cases for the cessation of diuresis and the increase in water retention in the cells through damage. So you’re saying that it’s much more important to look at what’s causing that inflammation, trying to get to the root of the problem, rather than prescribe a diuretic?*  
**RP:** Yes, even before the inflammation, there’s the energy problem. And something as simple as drinking too much water in relation to the energy your body is producing, for example a low thyroid person who can’t produce much metabolic energy, is very susceptible to drinking too much water and getting a very general disruption of their physiology. A pint or so of water passing suddenly through your stomach to your intestine causes a surge of serotonin release, and that’s simply a model of stress or shock in general, anything that shocks you or stresses you tends to start the same process that just a surge of water hitting the intestine is enough to increase serotonin, which then stimulates the production of prolactin, and prolactin is associated with water retention. Serotonin itself is, in a direct way, and serotonin increases the production of aldosterone, which produces water retention and inflammation and sets off a chain of reactions that lead to such things as heart failure.   
  
***Q:*** *And the unfortunate thing is when someone is low thyroid, they’re usually very thirsty all the time, anyway, so they crave that water and think they have to have that water, they say their body’s really craving it.*  
**RP:** Yes, it causes the tissues to retain water, even though it’s passing through them, through the kidneys mostly, and they’re not producing much evaporation through their lungs or skin, but it tends to leak out of their bloodstream, into the tissues and produce oedema, and oedema is harmful to all of the tissues in a direct way and it turns on a whole anabolic system, shifting away from oxidative metabolism, activating lipolysis, the release of fatty acids, shifting cell metabolism towards burning fat rather than sugar, imitating diabetes and aging. So it’s a generalized shock physiology that’s involved, when cells get waterlogged. It can start with low thyroid, but it repeats back and makes the low thyroid problem worse.  
  
***Q:*** *So that’s why you said that any leaf extract or tea made from a leaf of a plant is going to have minerals to help prevent this from happening. And if you made a cup of tea you’d sip it slowly, you wouldn’t just drink it down like a pint of water.***RP:** Yes, and the minerals, it isn’t essential that it be magnesium and potassium; calcium and sodium have many of the same functions even though each thing has its place in the mechanisms. If you’re in shock you can relieve the symptoms pretty much by taking more of any one of the alkaline minerals, potassium, sodium, magnesium or calcium. In heart failure and lung inflammation, many of the things that happen with shock or aging or any serious disease, the lungs and the heart tend to get waterlogged, and lose function. Just giving a very concentrated salt solution intravenously will relieve the symptoms very often. They’ve doubled the survival - cut the mortality rate in half by just giving extra sodium intravenously.  
  
***Q:*** *Why is it so often that doctors tell people to avoid salt? Why is salt so maligned? Especially when here they are using it in surgery?***RP:** It really I think got its big boost around 1950 when the diuretics came on the market. They found the diuretics took sodium out, at the same time they took water out, so they said, you should get the same effect by restricting the sodium intake and they applied that to pregnant women, and Tom Brewer, and some other people wrote about the horrible effects of sodium restriction in pregnancy, plus using diuretics, if you combine the two you get serious effects. After I had been reading of Tom Brewer’s work for a long time, I was seeing similarities between premenstrual syndrome and the toxaemia of pregnancy that he had worked on and I finally decided to suggest to young women who were having premenstrual water retention, and not having any good results simply by stopping their salt intake, I suggested that they follow Brewer’s prescription, to increase their salt intake when they were having oedema, water retention problems, and to go according to their craving for salt, rather than avoiding the craving. The first person who tried it, just had a total avoidance of premenstrual water retention the very first month she tried it.  
  
***Q:*** *How much salt did she have?*  
**RP:** Quite a lot.   
  
***Q:*** *What, like a teaspoon a couple of times a day?*  
**RP:** Well she just shook it on – even if her food was already salted she would just put lots more onto it and it just absolutely stopped, right from then on she never had a water retention problem ever again.  
  
***Q:*** *Do you know what the mechanism why doctors will tell you salt increases the risk of stroke, heart attack, just generally very bad for your cardiovascular system, so people should avoid salt at all costs, where do you think that mistaken ideology’s come from?*  
**RP:** David McKerron, thirty or forty years ago, was studying the issue, and he looked at the figures that the government published that that recommendation was based on, and he thought that if you look at the figures carefully, the people who eat the least salt had the highest blood pressure and the people who ate the most salt had the lowest blood pressure. And he saw what the figures really showed (that led to misinterpretation) was that low calcium intake was associated with hypertension, and that sodium was really there sort of as an innocent bystander, associated with the calcium deficiency.   
  
***Q:*** *So you’re saying that that calcium deficiency is more responsible for hypertension?***RP:** Yes. David McKerron I think has probably written maybe 150 articles on the subject. I think he was at Stanford or some Californian university when he started saying it’s not high sodium, it’s low calcium that causes hypertension, and I think that university invited him to leave.  
  
***Q:*** *Am I thinking right that you’ve mentioned in the past that low calcium intakes cause calcium to leak out of the bones and into the blood and that causes the calcification of the arteries eventually, which gives you hypertension?*   
  
**RP:** Yes, that’s the essential idea. The low calcium intake among other things, increases your parathyroid hormone, which pulls calcium out of your bones, and favours its movement into cells of all kinds, and when calcium is taken up by cells it stimulates them and tends to make them contract, and that’s one of the places that thyroid and energy production comes into the question because carbon dioxide produced by the action of thyroid, carbon dioxide keeps calcium out of cells. Even if you breathe into a bag to increase your carbon dioxide or take baking soda or whatever, the carbon dioxide will relax your blood vessels by helping the calcium to move out of the blood vessels and back into the bones.   
  
***Q:*** *So even short term exposure to higher blood levels of calcium or tissues, endothelium picking up the calcium, can contribute to that lack of elasticity, is it more characteristic of high blood pressure?*  
**RP:** Yes. Each of these things sets in motion the whole sequence of events. The low carbon dioxide which lets calcium get into cells and excite them, and tighten up the blood vessels for example, low carbon dioxide also lets the platelets release their serotonin, and the serotonin, besides adding to the tension of the blood vessels, makes them permeable and leaky, so that the water isn’t retained in the bloodstream but leaks through into the cells, and the cells that are taking up calcium, are also taking up water.  
  
***Q:*** *So 2000mg of calcium is really important for someone with hypertension to start implementing into their regime?***RP:** Yes, and supporting it with the other minerals. The facts that David McKerron looked at showed that this inverse connection between salt and blood pressure, that high salt intakes actually had lower blood pressure, and one of the things that is involved there is that sodium helps the cell, stimulates the cell to expel calcium. The sodium activates the thyroid function, and the thyroid function pushes calcium out of the cell and lets the cell relax.   
  
***Q:*** *Tom Brewer’s diet for treatment of toxaemia of late pregnancy, drinking quite a bit of milk was a part of it. Also salt and lots of protein, those were the main things that he was suggesting?*  
**RP:** Yes, he was talking about the protein, and adding salt to your food, but the milk has other things besides the protein, the calcium has its direct effect on blood pressure and the sugar of milk, it has its diuretic-like action, so the calcium and sugar add to the quantity of the protein.  
  
***Q:*** *Are there any safer diuretics?*   
  
**RP:** If you think of the sequence of stress effects that I mentioned, too much water, leading to too much serotonin and aldosterone and prolactin -  
  
***Q:*** *Which are all inflammatory -*  
**RP:** Yes, and cause water retention. And if you choose your substances with reference to inhibiting any or all of those, that’s going to be an anti-oedema, anti-inflammatory diet or treatment. Thyroid and progesterone, for example, lower all of these things. Progesterone is a very powerful antagonist to aldosterone, and drugs are being developed to be very similar to progesterone, but to be patentable, so they can sell them to treat heart failure and water retention and inflammation and so on.  
  
***Q:*** *Do they not have the same effect as progesterone?*  
  
**RP:** Enough that they all cure heart failure and such, but they have their own side effects, they’re just trying to make them as similar to progesterone as they can to minimize the side effects, but using any of the natural steroids derived from pregnenolone, either progesterone or DHEA, will help with water retention and oedema and heart failure and so on.  
  
***Q:*** *And that’s because they’re antagonistic to aldosterone which is causing the inflammation and the water retention?*  
**RP:** Yes. And aldosterone increases - besides inflammation it leads to fibrosis, and prolonged heart failure and vascular and kidney disease and so on, that lead to fibrosis, lung disease, everywhere that water retention and inflammation start, they tend to end up with fibrosis, so – sixty or seventy years ago, a researcher, Lipschutz, called pregnenolone and progesterone the anti-fibromatagenic steroids. They start out inhibiting fibrous overproduction and end up protecting against tumours.  
  
(About 18 minutes waiting to re-establish contact with Dr. Peat.)  
  
***Q:*** *About the need for carbon dioxide for athletes.*  
**RP:** In effect the carbon dioxide is pulling more oxygen through your cell system. The carbon dioxide acts as if it’s pulling more oxygen into the cell system. It activates the electron transport chain to use oxygen more quickly and effectively.  
  
***Q:*** *So is that what happens when an athlete takes baking soda?***RP:** Yes. They’ve done it with endurance racers, giving them a tablespoon of baking soda at the start of the race and you would think that it would make them more alkaline - alkaline is not necessarily a good state - the carbon dioxide actually enters the cell and becomes an acidic form from the baking soda bicarbonate, momentarily makes your blood more alkaline, but the absorbed carbon dioxide becomes acidic inside the cell, and the intracellular state should be slightly on the acid side when the oxygen is really working. They call it oxygen because it means acid former. And the acid that it makes is carbon dioxide, and in that slightly acidic state, oxygen is having its full action for producing energy, and it’s that same energy production which takes the calcium out of the cell and lets the cell relax and recuperate properly. If you aren’t producing or retaining enough carbon dioxide, the cell will begin making lactic acid, and the lactic acid leaves the cell in an alkaline, stressed condition, even though it’s acidifying the blood, it’s leaving the cell in a stressed alkaline condition that causes inflammation. So too much aerobic exercise becomes catabolic and inflammatory.  
  
***Q:*** *Discussion on treating chickenpox.*  
**RP:** Did you mention aspirin for chicken pox?   
  
***Q:*** *We’d like you to talk about it but first there is a caller with a question about calcium and getting it back in your bones. Can Dr Peat comment on Vitamin D3 for getting calcium back in the bones and also the ratio of calcium and magnesium that he recommends?*  
**RP:** The ratio isn’t as big an issue as a lot of books say. If you’re getting a little excess sodium and calcium, it spares the magnesium. The sodium and calcium activate cell respiration and cell respiration is needed for cells to retain magnesium. So if you’re low in sodium and calcium, you depend on a good thyroid function to retain magnesium, so any stress that increases aldosterone for example, is going to make you lose magnesium. So keeping your aldosterone and inflammation down, your thyroid, calcium and sodium up, is going to make you retain magnesium much more efficiently.  
  
***Q:*** *Some suggestions for chicken pox?*  
**RP:** Okay. Aspirin has been found to have mild anti-viral effect against several types of virus. Someone with AIDS sent me an old publication that they had begun a trial of aspirin for HIV infected people and they were getting good results when they discontinued the study. But it has been proven quite effective for several different types of virus including the herpes or chicken pox type.  
  
***Q:*** *Can you comment on why Vitamin D is so important for calcium issues?*  
**RP:** If you’re having blood tests, it’s good to have your Vitamin D3 in the upper part of the normal range, and it would also be good to have parathyroid hormone checked. When you’re getting enough Vitamin D and calcium, you will inhibit the parathyroid hormone, and the parathyroid hormone, although it has its place, you don’t want it to be chronically elevated.   
  
***Q:*** *Because it’s a cancer promoter.*  
**RP:** Yes.