

## **When Cells Become Resistant**

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Often in our approach to the body, we don't appreciate or anticipate its wisdom. Our model of belief is "if a little is good, more must be better". Our cells do not agree and have in place a finely tuned regulatory system to keep matters in check, especially with the hormones of the endocrine system.

The endocrine system of our body is an informational signal system much like our nervous system. Where the nervous system uses nerves to conduct information, the endocrine system uses chemical messengers called hormones that travel through the blood for communication. The organs of the endocrine system include the pineal, pituitary, thymus, thyroid, pancreas, adrenal, ovary and testes. These glands, in finely tuned communication, regulate tissue function, growth, metabolism, development and puberty. They also play a role in determining mood.

As chemical messengers, hormones are powerful agents in the body. Unlike nutrients, which supply raw material to the body for it to use as it needs, hormones pack a powerful punch in very minute doses.

Cells are then activated by the hormones through receptors on their cell membrane. To be set in motion, the cell must have the receptor particular to the hormone. To protect themselves from overdose, cells become resistant and will down-regulate their receptor sites; essentially saying 'we will not allow this overdose'. Cell resistance is how the endocrine system controls excessive amounts of hormones.

Consider the hormone insulin, for example. Insulin has many roles, but its primary function is to allow transport of glucose into the cells and lower blood sugar as a result. The body only tolerates a certain amount of sugar in the blood at any one time. Insulin acts as a door monitor to the cells, in essence saying to the sugar in the blood 'you need to get out of the blood, get on over here into the cells.

We can become insulin resistant, however, if we constantly bombard the body with refined sugar. With regular consumption of refined foods, we have repeated high blood sugar, which creates repeated high surging insulin. In time, the cells say 'enough!' They down regulate their receptor sites, becoming resistant to the barrage of insulin.

Diabetes is just one of the consequences. As a result of insulin resistance, the cells then do not allow glucose to pass inside for energy production or storage. Insulin then loses its effectiveness and has trouble clearing glucose out of the bloodstream. The pancreas reacts to what seems to be a lack of sufficient

insulin, so it churns out more. Eventually the pancreas loses the battle, blood glucose levels get out of control and diabetes is the outcome. Insulin resistance is often the underlying culprit as well with metabolic disorders such as hypertension, high triglycerides and low HDL cholesterol.

This resistance response not only occurs with internally surging hormones such as insulin, but also occurs with exogenous hormones that we consume orally or apply topically such as with the progesterone, estrogen and testosterone creams. We may feel the benefit of the hormone initially, maybe 3-4 months, but if our bodies are showered with doses that exceed the physiological range, our cells become resistant in response. We then think we need more, slather on more of the hormone cream, all the while the cells are continuing to down-regulate.

The result is that you can end up getting deficiency symptoms to an overdose. Creating abnormal situations with exogenous hormones, even those that are 'bio-identical' as well as in the creams can create further endocrine dysfunction. Contrary to what was first thought, that the hormones in the creams don't accumulate, they do. They build up in the subcutaneous tissues and then release into the body in unpredictable patterns. This up and down further confuses our body in its functioning and in our feeling of well-being.

An additional potential outcome is that the organ that was originally responsible for making the hormone responds in the hormone loop with 'I don't know what organ in the system is making this hormone; I guess I don't have to'. The organ may further shut down its function and atrophy in response.

A remedy for insulin resistance is diet and exercise. Get off the couch and away from the computer to get some exercise. Secondly, eat frequently throughout the day with well balanced meals and snacks to help keep your blood sugar in balance. Focus on proteins and fats along with low glycemic vegetables and fruits. Reduce, if not eliminate, refined foods.

For steroid hormone (ie: estrogen, progesterone, testosterone, DHEA) dysfunction and resistance: find a health care practitioner who works with nourishing the endocrine organs, supporting those organs in their job of hormonal production and regulation. Include on your health care team someone who helps you address the underlying malnutrition and lifestyle of eating and stress patterns that helped to create the hormonal dysfunction in the first place.

Above all, if using any hormones, re-testing and monitoring along the way is imperative. I have seen too many clients with hormone levels way beyond what the physiological needs are of the body, creating subsequent imbalance in the overall hormonal system. These people are wondering why they aren't feeling as well as they did when they first started using hormones. That's what happens when cells become resistant.

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