Brain Detoxification: An Emerging Orthomolecular Frontier with Therapeutic Potential

In this issue we have an article by a former intern of mine, Dr. Ivona Guzic, about medicinal peat and its potentially negative impacts upon the metabolism and therapeutic effects of psychiatric drugs. She postulates that the orthomolecular components in medical peat, as well as the high-temperatures associated with its use, might alter the pharmacokinetics of psychiatric drugs and their associated beneficial psychoactive properties. This case enumerates the unintentional negative interactions between a seemingly benign treatment and psychiatric drugs. While Guzic ascribes these negative interactions to hepatic and skin detoxification mechanisms, there is an evolving body of literature looking at extra-hepatic tissues like the brain and how its detoxification mechanisms might impact psychiatric drugs, diseases, and other substances like neurotoxins.

It is known that the drug-metabolizing cytochrome P450 enzymes are not only expressed in the liver, but also in the brain. It is possible to alter the brain level of a centrally-acting drug without influencing its plasma level due to the metabolizing effects of the cytochrome enzymes within the brain.[1] The net result of this would be an alteration of the drug's pharmacologic properties. This has broader implications since the brain-cytochrome enzymatic-mediated metabolism would not only influence centrally-acting drugs, but that of neurotransmitters and neurotoxins as well.

As orthomolecular clinicians we need to be mindful that our interventions might inhibit or augment the cytochrome enzymes within the brain. It we provide orthomolecular treatments that inhibit these enzymes, than the levels of centrally-acting psychiatric drugs would likely increase. By contrast, if our orthomolecular treatments augment these enzyme systems, it is entirely possible to decrease the levels of centrally-acting psychiatric drugs within the brain. These effects are entirely possible since C8-xanthate or 8-methoxypsoralen (i.e., brain-cytochrome 2B inhibitors) have been shown to increase brain propofol levels, while nicotine (i.e., a brain-cytochrome 2B inducer) was able to decrease brain propofol levels.[1]

Based on these facts, it would be very difficult to know what effects any orthomolecular intervention might have upon the detoxification of centrally-acting psychiatric drugs. Some patients depend on the stability afforded by these drugs. It is entirely possible that a seemingly benign orthomolecular intervention could undermine a patient's stability by reducing the brain level of a centrally-acting drug or even pushing the level too high leading to beneficial (i.e., augmented) drug effects, increased unwanted effects (e.g., sedation or drowsiness), or even neurotoxicity.

Published data suggests that combining orthomolecular treatments with psychiatric drugs is likely to enhance the pharmacological effects, suggesting that detoxification might be altered in a manner that increases the brain levels of psychiatric drugs. In a review article, the evidence showed that various micronutrients enhanced the efficacy of psychiatric drugs and could allow for dose reductions.[2] In an article that assessed the safety of a micronutrient formula (i.e., 36 ingredients comprised of 14 vitamins, 16 minerals, 3 amino acids, and 3 antioxidants), it was acknowledged that enhanced pharmacological effects are likely to result from taking both micronutrients and psychiatric drugs.[3] This article also noted that psychiatric drug adjustments are expected since the combinations of micronutrients and psychiatric drugs are "likely to be accompanied by complex interactions, which, if approached with insufficient caution, will result in unintended consequences" since mental health patients are genetically and metabolically a heterogeneous group of individuals.[3]

Given the fact that data evaluating the impacts between orthomolecular interventions and psychiatric drugs is an emerging

field of study, more needs to known about how specific orthomolecular treatments impact the detoxification of psychiatric drugs within the brain. At the present time, clinical vigilance and close clinician-patient communication is warranted when patients are treated with these combinations. The potential upside to all of this is that some patients might be able to reduce their dosages of psychiatric drugs, or perhaps be able to fully discontinue them over some circumscribed period of time. These latter benefits should summarily reduce the increased morbidity and non-compliance often attributed to psychiatric drug treatment.

–Jonathan E. Prousky, ND, MSc
Editor

References

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