

# Medicinal Peat Baths May Accelerate the Detoxification of Psychotropic Drugs: A Case Report

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**Abstract** *A patient with anxiety and depression sought naturopathic care to prevent depressive relapses. During an 11-month period, the patient experienced four depressive episodes, each preceded by medicinal peat bath treatment. Based on its detoxifying and hyperthermic effects, it was hypothesized that medicinal peat baths may have accelerated the detoxification of psychotropic drugs. Further research is required to understand the pharmacokinetic effects of medicinal peat baths on drug absorption, metabolism and clearance. Until then, clinicians utilizing medicinal peat baths need to be aware that its detoxification properties might undermine the quality of life for patients taking psychotropic drugs.*

## Introduction

In the *Textbook of Natural Medicine*, Groven enumerates the history, biological composition, physiological effects, and clinical uses of medical peat baths.<sup>1</sup> Medicinal peat has been used in Europe for the past two hundred years, and contains many orthomolecular substances that interact with organic and inorganic compounds. Medicinal peat ingredients include sulfur compounds, magnesium, manganese, iron, and humic acids. It also contains higher concentrations of nitrous substances, which is responsible for its robust biologic activity. Therapeutic medicinal peat baths have been used to treat numerous medical conditions, such as skin conditions, musculoskeletal disorders, autoimmune diseases, and genitourinary disorders.

While the anti-inflammatory, immunomodulating, and detoxifying properties of medicinal peat are well documented,<sup>2</sup> benefits of improved quality of life with respect to anxiety and depression have been documented to a lesser extent.<sup>3</sup> Such documentation is valuable in establishing the ther-

apeutic effects of medicinal peat baths for psychiatric disorders.

Psychotropic drugs play a major role in the management of psychiatric disorders, and it is not unusual for patients to be on combinations of drugs including antidepressants, antipsychotics, antimanic drugs, and benzodiazepines. People with psychiatric disorders make up a sizeable cohort of people seeking naturopathic medical care and subsequently utilizing naturopathic therapies. This is especially relevant in patients taking psychotropic drugs, where the pharmacokinetic effects of seemingly harmless therapies, such as medicinal peat baths, remain unknown.

The case in question describes several acute exacerbations of anxiety and depression in a 47 year-old woman following a series of medicinal peat bath treatments. Given the time course of psychiatric symptoms in relation to medicinal peat bath treatments, this case provides a rationale for peat-induced drug detoxification and raises awareness about inadvertently detoxifying drugs from patients that need them for stability.

## Case Description

A 47 year-old Caucasian female of German descent presented to the Robert Schad Naturopathic Clinic (Toronto, Ontario, Canada) on June 4, 2008, for a follow-up appointment with a new intern. She regularly attended the clinic since 2004 and described her visits as "self-care" to hopefully prevent relapses of anxiety and depression.

A physical exam revealed an alert, oriented, and well-nourished female in no acute distress. Vital signs were within normal limits. A screening physical examination was rather unremarkable. The only positive findings were hypertonic trapezius and erector spinae muscles bilaterally. Laboratory testing revealed elevated total cholesterol and low-density lipoprotein cholesterol levels and a decreased 25-hydroxycholecalciferol level. Clinic visits with the patient revealed an enthusiastic personality, positive affect, and a cheerful demeanor.

This patient had an extensive mental health history that began at the age of 24, when she was hospitalized for what was described as a "nervous breakdown" brought on by exam stress. Features of her nervous breakdown included depressed mood, social anxiety, and agoraphobia resulting in panic attacks. She remained stable for the next six years until the birth of her two children, in which feelings of isolation brought on post-partum depression. She was subsequently treated with antidepressants and inpatient psychotherapy after each birth. She remained stable for the next ten years and did not need psychotropic drugs during this time.

In 2005, at the age of 43, the patient had a depressive relapse with severe anxiety, agoraphobia, and panic attacks lasting six weeks. Her panic attacks were triggered by crowded malls and the use of public transit. She was hospitalized for suicide risk and treated with citalopram (40 mg/day) and quetiapine (25 mg at bedtime).

Since 2005, the patient has experienced one or two depressive episodes each year, lasting two to six weeks, and often requiring assistance from a psychiatric day program at a local hospital. Her current regimen of

psychotropic drugs included citalopram (40-60 mg/day), risperidone (0.5-2 mg/day), and lorazepam (2 mg/day).

Based on patient history and clinical findings, diagnoses of hypercholesterolemia and vitamin D deficiency were added to existing diagnoses of depression and generalized anxiety disorder concomitant with agoraphobia and panic disorder. Treatment aimed to reduce cholesterol, improve vitamin D status, relieve work-related muscle tension, and most importantly, prevent depressive relapses through stress reduction and relaxation.

At the onset of treatment in June of 2008, the patient was prescribed a phytosterol and fiber supplement to help lower blood cholesterol levels. She was also prescribed cholecalciferol (2,000 IU/day), as well as 5-hydroxytryptophan (100 mg at bedtime) to reduce depressive symptoms.

The patient was educated about the benefits of relaxation exercises, and asked to perform ten minutes of deep breathing daily. She was also educated on the importance of healthy eating and regular exercise for health promotion and agreed to walking daily for thirty minutes.

In conjunction with the above prescription, a hydrotherapy protocol consisting of six medicinal peat bath treatments with massage was prescribed. The therapeutic effect of medicinal peat is based on the high bath temperature and the activity of the biologically active peat substances.<sup>1</sup> The rationale for this protocol was to stimulate blood and lymph circulation in hopes of delivering more oxygen and micronutrients into the muscle tissue, while at the same time promoting muscular relaxation and stress relief.

Medicinal peat baths involve submersion of the patient into a steel bathtub containing hot water mixed with peat. Starting water temperature is between 41-45°C, depending on the patient's age, heat tolerance and sense of well-being. After 20 minutes of bathing, the patient exits the tub and lies supine on a table, wrapped in a sheet and wool blanket to encourage perspiration for 25 minutes. Vital signs are monitored and fluids and electro-

lytes are replaced throughout treatment.

On June 18, 2008, the patient received her first of six medicinal peat bath treatments. When she returned for a follow-up massage treatment one month later, she reported suffering a massive anxiety attack shortly after her previous visit. Her anxiety persisted for approximately two weeks. Persistent panic attacks prevented her from leaving her home. She described symptoms of tachycardia, palpitations, dizziness, and a sense of terror, which were exacerbated upon entering confined spaces. She reported feeling depressed and rated her well-being as 5 out of 6 using the Measure Yourself Medical Outcome Profile (MYMOP) scoring system. The MYMOP is a patient-centered outcome questionnaire with internal consistency and construct validity.<sup>4-6</sup> It has been used extensively in primary care and complementary medicine settings as a means of collecting and quantifying qualitative patient experiences. It requires the participant to specify two personally relevant symptoms that are the most bothersome (of greatest importance to their individual health) and to rate them numerically on a 7-point visual analogue scale (0-6). The MYMOP also asks about wellbeing and again the participant is to rate this numerically. Wellbeing was the only MYMOP score tracked in this case report. Higher scores correspond to a lower satisfaction (i.e., worse) level of health.

On December 10, 2008, the patient returned for a follow-up massage treatment. She had received her fourth medicinal peat bath just three weeks prior (November 19). She reported that a depressive relapse had occurred since. Despite feeling depressed, she was able to function and go to work. The patient was alert and oriented to person, place, and time, and rated her well-being as 5 out of 6 on MYMOP. She did, however, exhibit paranoid thoughts and delusions. Specifically, she claimed that her telephone line was tapped and that she was being shadowed. Furthermore, she was highly suspicious of her surroundings and believed she was the "object of a witch hunt." The patient denied any history of schizophrenia upon

questioning. At this time, 225 mg/day of L-theanine was prescribed to decrease the severity of her anxiety symptoms.<sup>7</sup>

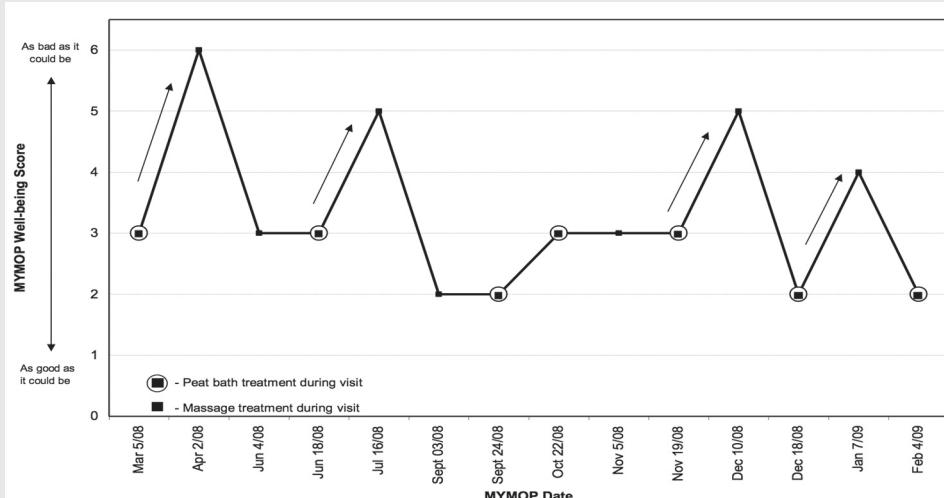
On January 7, 2009, the patient returned for a massage treatment after receiving her fifth medicinal peat bath treatment (December 18). She again, reported having two weeks of depression following her last peat bath. She expressed concern about the increased frequency of anxiety attacks and depressive episodes. She was continuing to eat healthy, exercise regularly, and was compliant with all of her prescribed supplements and medications. She reported feeling satisfied in her personal and professional life, and feeling optimistic about her future.

Further investigations into the patient's health history revealed that the previous intern had documented the patient as having had a severe nervous breakdown on April 2, 2008. The patient rated her well-being as 6 out of 6 on MYMOP and required hospitalization. Coincidentally, this incident was also preceded by a medicinal peat bath treatment.

## Discussion

Despite consistent psychiatric monitoring and appropriate dose adjustments, the patient experienced a total of four significant depressive episodes in 2008. These episodes followed medicinal peat bath treatments. They were much more frequent than she had experienced previously. Most interestingly, the patient reported that 2008 was her least stressful year to date and could not attribute her depressive episodes to stress. Prior to 2008, her one or two depressive episodes were commonly triggered by stress associated with divorce, finances, and single parenthood.

Exacerbations of this patient's psychiatric symptoms appear to be temporally related to the medicinal peat bath treatments (Figure 1, p.22), even though it is difficult to assess if a causal relationship exists between these two variables. Nonetheless, it is worthwhile to explore the possibility of peat-induced drug detoxification in this case, especially since the depressive episodes in question occurred while the patient was compliant with her psy-

**Figure 1.** Effect of Peat Bath on Patient Well-Being Score. MYMOP Score vs. Visit Date

chotropic drugs and were not precipitated by any known stressful triggers.

### Detoxifying Effects

Fulvic acid appears to be the active chelating constituent in medicinal peat.<sup>8</sup> It preferentially chelates multivalent cations, i.e., Mg<sup>2+</sup>, Ca<sup>2+</sup>, and Fe<sup>2+</sup>, and interacts with silica.<sup>9</sup> Interestingly, the chemical constituents of common psychotropic drugs contain these elements in ingredients, such as magnesium stearate, iron oxide, and colloidal silicon dioxide.<sup>10-12</sup>

As the largest organ of elimination, the skin plays an integral role in the therapeutic action of medicinal peat baths. One *in vitro* study confirmed that peat baths result in transcutaneous permeation of biologically active fulvic acid, in effect explaining the "chemical" effects of medicinal peat treatment in clinical practice.<sup>13</sup> Peat substances are absorbed through the skin where they bypass the liver and enter systemic circulation.<sup>8,14,15</sup> Evidently, skin permeation is not only important for the absorption of medicinal peat substances, it is also important in eliminating toxic substances out of the body through perspiration.<sup>16,17</sup>

It is not uncommon for drug rehabilitation experts to employ therapeutic perspiration strategies to detoxify drugs.<sup>17</sup> Once a drug enters the blood stream and makes its first pass through the liver, the drug is broken down to an active metabolite.<sup>17-19</sup> Psychotropic drugs like risperidone and citalopram are highly fat-soluble and are easily stored in body fat where they continue to exhibit their effects.<sup>20</sup> Published data has shown that drug residues can still be found in the sweat of former drug abusers, and that therapeutic perspiration can facilitate their removal through the skin.<sup>21</sup> It is conceivable that the high temperatures achieved through medicinal peat can similarly mobilize fat-soluble metabolites and aid in their elimination from the body, primarily through perspiration.

### Hyperthermic Effects

Physiologically, moist heat at temperatures between 41°C and 45°C causes profuse sweating with loss of water, salt, uric acid, creatinine, phosphates, sulfates and lactic acid.<sup>3</sup> Consequently, as body temperature and blood pressure rises, the skin becomes permeable, and liver metabolism accelerates.<sup>3,14</sup>

The physiological stress of a high-temperature medicinal peat baths may alter drug actions. Any therapy that causes redistribution of blood flow to various organs can produce a difference in the binding, metabolism and clearance of drugs.<sup>22</sup> In vitro studies show that hepatic metabolism of drugs utilizing the cytochrome P450 pathways are upregulated in hyperthermic states.<sup>22,23</sup> One study evaluating the effects of temperature on the pharmacokinetics of ifosfamide in mice observed that a 60-minute water bath immersion at 41°C resulted in lower plasma concentrations of the activated drug, indicating a higher elimination rate than a water bath immersion at 37°C.<sup>24</sup> Thus, an increased body temperature, such as that induced by medicinal peat baths, may also increase the plasma clearance, distribution, biotransformation, and excretion of psychotropic drugs by the same mechanism.

### Limitations

Due to an absence of research, it is difficult to assess whether the frequency of medicinal peat baths was sufficient to elicit a full detoxification response. Even though the MYMOP scores and the patient's subjective report established a correlation between medicinal peat baths and depressive episodes, it is impossible to confirm with certainty that a causal relationship existed between these two variables.

### Conclusion

It is conceivable that medicinal peat therapy has the potential to accelerate the detoxification of psychotropic drugs based on its strong detoxifying and hyperthermic effects. As patients with psychiatric disorders require sufficient drug concentrations to moderate symptoms and maintain stability, it is imperative for clinicians to be aware of the possible adverse effects resulting from medicinal peat therapy. Adding psychotropic drugs to the list of relative contraindications to medicinal peat therapy might be a prudent measure when evaluating the benefits and risks of medicinal peat bath treatment. There is essentially no clinical data on the

therapeutic effect of medicinal peat baths on patients taking psychotropic drugs. More clinical research is needed to fully understand the detoxifying effects of medicinal peat baths on patients taking psychotropic drugs and how these effects alter drug metabolism.

### Competing Interests

The author declares that she has no competing interests.

### Statement of Informed Consent

Written consent was obtained from this patient for publication of this report.

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