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Effects of Resveratrol, Taurine, Vitamin-A and Selenium-based Supplementation on Residual Depressive Symptoms in Patients with Partial Response to SSRI-SNRI

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Abstract

Background: Thyroid hormones, particularly free triiodothyronine (FT3), play a crucial role at both cerebral and systemic levels. The association between inflammation and depression has long been recognized, as well as the contribution of inflammatory processes to the onset and persistence of depressive symptoms. Hepatic type 1 deiodinase (DIO1), a key enzyme regulating thyroid hormone activation, is inhibited under inflammatory conditions. A nutraceutical formulation containing resveratrol, taurine, vitamin A and selenium has therefore been developed to enhance DIO1 expression, improve peripheral FT3 availability and potentially support mood regulation.

Methods and Findings: Twenty patients (mean age 59 years) in partial remission under antidepressant therapy were enrolled. Resveratrol (200 mg), taurine (100 mg), vitamin A (400 µg) and selenium (50 µg) were added to the ongoing therapeutic regimen (SSRI treatment for at least 2 months). Clinical assessments were performed at baseline and after 1 month using the following scales: the Hamilton Rating Scale for Depression (HRS), the Clinical Global Impression (CGI), the Short Form Health Survey (SF-36) and the Dosage Record and Treatment Emergent Symptom Scale (DOTES).

After 1 month of treatment with resveratrol, taurine, vitamin A and selenium, 55% of patients showed clinical improvement according to the CGI scale ($p<0.05$), with a mean reduction of 4.2 ±3.38 (SD) points on the HRS ($p<0.05$). Statistically significant improvements were mainly observed in quality of life, as assessed by the SF-36, across several domains (>5-point increase; $p<0.05$), including physical functioning, vitality/energy, role limitations due to emotional problems, social functioning and general health perception. No dropouts or adverse events were reported according to the DOTES scale.

Conclusions: The addition of resveratrol, taurine, vitamin A and selenium to standard antidepressant therapy (SSRIs) in patients with partially responsive depression was associated with clinical improvement and enhanced quality of life. The findings suggest a potential role of nutraceutical formulation with resveratrol, taurine, vitamin A and selenium as add-on strategy in the treatment of depression possibly mediated by modulation of thyroid hormone metabolism.

Keywords: Depression, SSRI, Partial remission, Resveratrol, Taurine, Vitamin A, Selenium, FT3/FT4, thyroid hormone.

Introduction

Major Depressive Disorder (MDD) is a highly prevalent and disabling condition worldwide. Epidemiological data indicate that approximately 7% of the adult population experiences depression within a given year, with rates ranging from 5% to 10% across European countries and reaching up to 10-15% in specific contexts according to the World Health Organization

[1]. In the United States, the National Institute of Mental Health reports that nearly 7% of adults experience at least one major depressive episode annually [1-2]. Despite the availability of effective pharmacological treatments, a substantial proportion of patients achieve only partial remission, highlighting the need for adjunctive therapeutic strategies targeting biological mechanisms beyond monoaminergic neurotransmission [3-4].

Among the biological systems implicated in depression, thyroid function has long attracted clinical and research interest [5-8]. Thyroid hormones particularly Free Triiodothyronine (FT3) and Free Thyroxine (FT4) play a critical role in brain development, synaptic transmission, neuroplasticity and mood regulation [5-6]. Alterations in thyroid hormone levels, even within the euthyroid range, have been associated with depressive symptoms [5-7]. Hypothyroidism is frequently accompanied by mood disturbances and emerging evidence suggests that reduced FT3 levels may correlate more closely with depressive severity than FT4 alone, supporting the potential role of FT3 as a biomarker of symptom burden [8-12]. Furthermore, Liothyronine (T3) augmentation has been investigated as an adjunctive treatment to antidepressants particularly tricyclic antidepressants and selective serotonin reuptake inhibitors with evidence supporting its efficacy in selected patients, although concerns regarding safety, tolerability and long-term adherence remain [8-11].

In parallel, increasing attention has been directed toward the role of inflammation in the pathophysiology of depression. Major depressive disorder has been consistently associated with elevated levels of proinflammatory cytokines, including Interleukin (IL)-1β, IL-6, Tumor Necrosis Factor (TNF)-α and interferon (IFN)-γ [9-13]. Meta-analytic findings support a robust association between systemic inflammation and depressive symptoms, with cytokine concentrations correlating with illness severity [9-13]. Inflammatory processes may influence neurotransmitter systems involved in mood regulation, including serotonin and dopamine pathways [13-16]. Notably, inflammation also interacts with thyroid hormone metabolism through the modulation of deiodinase enzymes (DIO1, DIO2 and DIO3), which regulate the peripheral and central conversion of Thyroxine (T4) to the biologically active T3 [16]. Cytokines such as IL-1β and IL-6 have been shown to attenuate hepatic DIO1 expression, potentially reducing FT3 availability and contributing to depressive symptomatology [6]. Thus, thyroid hormone metabolism represents a potential interface between endocrine and inflammatory pathways in depression [13].

On this basis, strategies aimed at enhancing peripheral FT3 availability through modulation of deiodinase activity may represent a novel adjunctive approach in patients with MDD [17]. Thyroid hormones exert antidepressant effects through multiple mechanisms, including the upregulation of thyrotropin-releasing hormone, corticotropin-releasing factor and brain-derived neurotrophic factor, as well as neuroprotective and neuroplastic effects [6]. However, direct T3 administration may raise concerns regarding safety and adherence [17].

Interestingly, a recent in vitro experiment showed that resveratrol, taurine and vitamin A may counteract the inflammatory inhibition of DIO1 in hepatic cells [18]. Thitavita©, a compound including resveratrol, taurine, vitamin A and selenium may thereby increase peripheral FT3 availability, offering a targeted and safe alternative strategy.

In patients with major depressive disorder receiving stable antidepressant treatment, modulation of thyroid hormone metabolism through this mechanism could contribute to improved depressive symptoms by addressing the interplay between thyroid function, inflammation and mood regulation. With the aim of evaluating the antidepressant contribution and quality of life effects of Thitavita© in patients with partial remission during treatment with SSRIs and SNRIs, we evaluated 20 patients.

Methods

We analyzed in this study consecutive patients attending a psychiatric outpatient clinic with a diagnosis of major depression in partial remission who had been receiving Selective Serotonin Reuptake Inhibitors (SSRI) or Serotonin-Norepinephrine Reuptake Inhibitor (SNRI) standard therapy for at least two months. The patients were diagnosed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) [19].

At baseline, clinical data were collected and patients were assessed using the following scales: the Hamilton Rating Scale for Depression (HRS) [20], the Clinical Global Impression (CGI) [21] and the Short Form Health Survey (SF-36) [22].

Patients were treated for one month with a dietary supplement containing resveratrol (200 mg), taurine (100 mg), vitamin A (400 µg) and selenium (50 µg) on top of SSRI treatment at the same dosage of the baseline visit.

After one month of treatment, patients were reassessed to evaluate compliance with the dietary supplement and were administered the same rating scales, in addition to the Dosage Record and Treatment Emergent Symptom Scale (DOTES) to assess safety [21].

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee and with the Declaration of Helsinki and its later amendments.

Statistical analysis

Descriptive statistics were applied to summarize the data: continuous variables were expressed as mean ± Standard Deviation (SD) or standard error of the mean (SEM), as appropriate, while categorical variables were reported as frequencies and percentages. Comparisons of means were conducted using the Student's t-test for paired or independent samples, as appropriate. A two-tailed alpha level of 0.05 was considered statistically significant.

Results

Twenty patients (80% female, mean age: 59 years; SD: 18.6 years) in partial remission under antidepressant therapy were enrolled (citalopram, duloxetine, escitalopram, paroxetine, sertraline, venlafaxine, vortioxetine). Ninety percent of patients were

receiving SSRI or SNRI treatment at a non-maximal dose and 60% had at least one comorbidity (COPD, ESRD, previous cervical, prostate, or thyroid cancer, Crohn's disease and mild cognitive impairment) as shown in Table 1.

At visit 1, after one month, the compliance with dietary supplement with resveratrol, taurine, vitamin A and selenium was 100%. Fifty-five percent of patients showed clinical improvement (90% minimally improved) according to the CGI scale ($p<0.05$), with a mean reduction of 4.2 ± 3.38 (SD) points on the HRS ($p<0.01$).

Statistically significant improvements were mainly observed in quality of life, as assessed by the SF-36, across several domains (>5-point increase; $p<0.01$), including physical functioning, vitality/energy, role limitation, role limitations due to emotional problems and social functioning. A 5 point increase has been found also for SF-36 health change ($p<0.05$). No dropouts or adverse events were reported according to the DOTES scale (Figure 1).

A sensitivity analysis has been made on patients older than 65 years. Twelve patients (75% female) with a mean age of 71 years (SD 3.6 years) presented a reduction of HRS of 3.66 ($p<0.01$) with global improvement of CGI of 66.6% (75% minimally improved and 25% much improved). With the SF-36 scale we observed a clinical (>5-point increase) and statistical significant improvement of physical functioning ($p<0.01$), role limitation ($p<0.05$), role limitations due to emotional problems ($p<0.01$), vitality/energy ($p<0.05$), emotional well-being ($p<0.05$) and social functioning ($p<0.05$).

To minimize potential confounding, we performed a sensitivity analysis excluding the thyroidectomized patient. The results remained consistent with those of the overall cohort, further supporting the robustness of the findings.

Table 1: Patient characteristics.

	N. 20
Mean age (SD)	59 ys (18.6)
Female sex	80%
Mean baseline HRS (SD)	16.9 (2.5)
Mean baseline CGI (DS)	3.6 (0.5)
Antidepressant (mid dosage range) (%)	90%
SF-36 - Baseline mean values (DS)	
Physical Functioning	74,5 (25.4)
Role limitations due to physical health	37,5 (44.7)
Role limitations due to emotional problems	7,8 (16.6)
Energy/fatigue	28.6 (11.5)
Emotional well-being	38,8 (8.4)
Social functioning	32,5 (13.7)
HRS: Hamilton Rating Scale; SD: Standard Deviation; GCI: Clinical Global Impression	

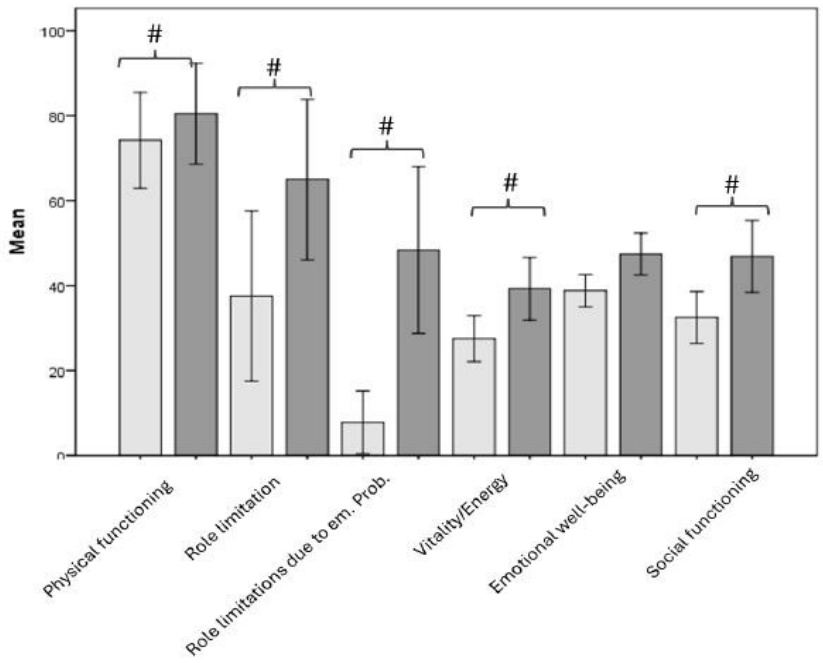

Figure 1 Histograms representing the mean values with standard error of the mean (SEM) for the individual items of the SF-36 scale (# $p<0.01$); gray bars represent baseline values and dark gray bars represent 1 month time point values.

Discussion

The addition of resveratrol, taurine, vitamin A and selenium to standard antidepressant therapy (SSRIs) in patients with partially responsive depression was associated with clinical improvement and enhanced quality of life, especially in physical and mental functioning.

Moreover, in the series of analysed cases which consisted in a population of moderate depressive symptoms, we found a statistically significant difference between baseline and one month means of HRS and CGI-S scores at three months. Those results were consistent with what observed in other clinical experiences with supplements in depressive patients [23].

The SF-36 is a widely used, generic patient-reported outcome measure designed to assess health-related quality of life across eight domains, including physical functioning, bodily pain, general health, vitality, social functioning and mental health. In the scientific literature, a clinically meaningful improvement in SF-36 scores is commonly interpreted through the concept of the minimal clinically important difference (MCID), which represents the smallest change perceived as beneficial by patients or that would justify a change in clinical management. Although MCID thresholds can vary depending on the population and condition studied, a frequently cited benchmark is an improvement of approximately 5 points in the SF-36 domain scores, or around 2.5-5 points in the Physical and Mental Component Summary (PCS and MCS) scores [24]. In our experience, we observed a one-month improvement in physical functioning, vitality/energy, role limitation, role limitations due to emotional problems, social functioning and general health that were well above the 5-point threshold, highlighting the potential clinically meaningful contribution of the nutraceutical formulation to quality of life. Also the sensitivity analysis in older patients (>65 years) confirmed these results for physical functioning, role limitation, role limitations due to emotional problems, vitality/energy, emotional well-being and social functioning.

A mean reduction of 4.2 points on the HRS from a baseline of 17 (≈ 25% improvement) is generally considered clinically meaningful in add-on treatment studies. In patients with moderate depression partially responsive to Selective Serotonin Reuptake Inhibitors (SSRIs) or SNRIs, this exceeds the minimal clinically important difference (~ 3 points), suggesting an additive therapeutic signal. Fifty-five percent of patients showed clinical improvement on the Clinical Global Impression (CGI) scale, with 90% classified as "minimally improved," indicating convergence between global clinical judgment and symptom-level change, albeit of modest magnitude. The size of the HRS reduction appears to be above the upper range of placebo responses typically observed in antidepressant trials, which are often around 2-3 points and associated with response rates of approximately 30–40%, suggesting a potential signal beyond placebo, although no direct placebo comparison is available [25-28].

Patients with major depression may have a certain degree of peripheral inflammation with higher levels of inflammatory cytokines such as IL-8 [29]. It is well known that inflammatory stimuli down-regulate the expression of DIO-1 at hepatic level via intracellular nf-KB induction [30]. As previously shown in an in vitro model resveratrol, taurine, vitamin A and selenium may restore DIO-1 expression in inflammatory conditions [19]. The dietary supplement in these patients may have contributed to increase the hepatic DIO-1 expression and consequently to restore normal level of peripheral FT3. Furthermore, an effect on DIO at the CNS level cannot be excluded. This may explain the patient reported effect in terms of QoL, specifically physical energy and mental function.

The use of nutrient supplementation in patients with MDD and a partial response to SSRIs or SNRIs may offer an effective and potentially safer alternative to antidepressant dose escalation or pharmacological augmentation. This may be particularly relevant in older adults, who are more susceptible to adverse drug reactions and drug–drug interactions. The observation that the intervention remained effective in the elderly subgroup further supports its potential role as a well-tolerated therapeutic option in a population frequently burdened by physical symptoms, reduced quality of life and polypharmacy. In this analysis no adverse event has been reported with the nutrient supplements.

A limitation of this study is that the FT3/FT4 ratio is known to decline with advancing age, likely reflecting age-related changes in peripheral thyroid hormone metabolism. Therefore, the interpretation of our findings may be influenced by the age distribution of the study population. To address the potential influence of age-related changes in the FT3/FT4 ratio, we performed a sensitivity analysis restricted to older participants. The results were consistent with those observed in the overall cohort, supporting the robustness of our findings and confirming the effectiveness of the association also in the older population.

To further minimize potential confounding related to altered thyroid hormone physiology, we performed an additional sensitivity analysis excluding the thyroidectomized participant. The results remained consistent with those of the primary analysis, confirming the robustness of the findings and indicating that the observed associations were not driven by the inclusion of this individual.

Other limitations were the absence of a control arm, the small sample size and a relatively short follow-up period of one month and the lack of biomarker evaluation (e.g. FT3/FT4 ratio analysis). However, the encouraging findings from this case series support the need for further studies to better establish the role of this nutraceutical approach in this setting.

Achieving clinically meaningful improvements in depressive symptoms and quality of life through dietary supplementation may represent a useful therapeutic strategy, offering the advantage of a favorable safety profile and minimal adverse effects compared with conventional pharmacological approaches. In fact, several studies have reported the short- and long-term side effects of SSRIs and SNRIs: in the short term, weight gain and sexual dysfunction [31]; in the long term, emotional blunting, with both effects appearing to be dose-dependent [32].

In this preliminary report, we evaluated 20 depressed patients with partial remission during treatment with SSRIs or SNRIs administered at non-maximal dosages in order to avoid the onset

of side effects and improve treatment compliance. The results emerging from the comparison of rating scales at baseline and at the end of the study treatment appeared statistically significant, with clinically relevant improvements in both physical and mental quality-of-life domains.

In this study, we suggest a potential therapeutic alternative for patients who are particularly susceptible to the side effects of SSRIs and SNRIs and who fail to achieve a complete response at effective dosages. In particular, the potential ability of Thitavita© to enhance the peripheral conversion of thyroid hormones may contribute to improvements in both cognitive and physical functioning, supporting its possible role as an adjunctive strategy in the treatment of depression. Although the sample size was limited, the findings suggest a potential role for modulation of thyroid hormone metabolism as an adjunctive therapeutic approach, particularly with respect to quality of life.

Acknowledgment

Giuseppe Ceraudo, Luca Tomisti, Giuseppe Pasqualetti and Fotios Loupakis conceived and designed the study. Giuseppe Ceraudo was responsible for patient recruitment and data collection. Patrizia Maritato and Pietro Scarpellini contributed to data management and study support. Luca Tomisti, Giuseppe Pasqualetti and Fotios Loupakis contributed to data analysis, interpretation of the results and critical revision of the manuscript. Chiara Sardella made the critical revision of the manuscript. Giuseppe Ceraudo drafted the first version of the manuscript. All authors reviewed the manuscript, approved the final version and agreed to be accountable for all aspects of the work.

Competing Interests

Giuseppe Pasqualetti and Fotios Loupakis declare ownership of shares in 3Trees® and participated in the study design. They were not involved in patient recruitment or data collection. The remaining authors declare that they have no competing interests and conducted the study independently, including data collection, analysis and interpretation.

References

1. Depression, WHO. (2017) Other common mental disorders: Global health estimates. Geneva: World Health Organization 24.
2. National Institute of Mental Health (2024) Major depression.
3. Łysik A, Logoń K, Szczygieł A, Wołoszczak J, Wrześniewska M, Leszek J. (2025). Innovative approaches in the treatment-resistant depression: Exploring different therapeutic pathways. GeroScience 47: 5543-5558.
4. Saelens J, Gramser A, Watzal V, Zarate Jr CA, Lanzenberger R, Kraus C (2025). Relative effectiveness of antidepressant treatments in treatment-resistant depression: A systematic review and network meta-analysis of randomized controlled trials. Neuropsychopharmacology 50: 913-919.
5. Bunevicius R, Prange AJ Jr. (2010) Thyroid hormones and depression: A review J Thyroid Res: 740594.
6. Klein I, Ojamaa K. (1996). Thyroid hormone and the heart. Am J Med 101: 459-460.
7. Zhou Y, Ma Y, Wu Q, Wang Q, Yang WFZ, et al. (2021). Comparison of thyroid hormone levels between patients with major depressive disorder and healthy individuals in China. Front Psychiat 12: 750749.
8. Hage MP, Azar ST. (2012). The link between thyroid function and depression. J Thyroid Res 2012: 590648.
9. Dantzer R, O'connor JC, Freund GG, Johnson RW, Kelley KW. (2008). From inflammation to sickness and depression: When the immune system subjugates the brain. Nat Rev Neurosci, 9: 46-56.
10. Miller AH, Maletic V, Raison CL. (2009) Inflammation and depression: A review. Psychiatr Clin North Am 32:229-245.
11. Raison CL, Capuron L, Miller AH. (2006) Inflammation, depression and treatment resistance. J Clin Psychiatry 67: 8-12.
12. Kelly T, Lieberman DZ. (2017) The use of triiodothyronine (T3) in treatment-resistant depression. Innov Clin Neurosci 14:24-29.
13. Gao K, Xie Z, Wang Y, Liu H, Zhang H. (2020) Inflammation and depression: A review. Psychiatry Res. 283:112592.
14. Wenzek C, Boelen A, Westendorf AM, Engel DR., Moeller LC, Führer D. (2022). The interplay of thyroid hormones and the immune system–where we stand and why we need to know about it. Eur J Endocrin 186: R65-R77.
15. van der Spek AH, Fliers E, Boelen A. (2017). Thyroid hormone metabolism in innate immune cells. J Endocrinol 232: R67-R81.
16. Kwakkel J, Wiersinga WM, Boelen A. (2006). Differential involvement of nuclear factor-κB and activator protein-1 pathways in the interleukin-1β-mediated decrease of deiodinase type 1 and thyroid hormone receptor β1 mRNA. J Endocrinol 189: 37-44.
17. Kwakkel J, Surovtseva OV, De Vries EM, Stap J, Fliers E, Boelen A. (2014). A novel role for the thyroid hormone-activating enzyme type 2 deiodinase in the inflammatory response of macrophages. Endocrinology 155: 2725-2734.
18. Valeri E, Loupakis F, Pasqualetti G, Paccosi E, Proietti De Santis L, Filippi S. (2026). Novel nutraceutical combination restores hepatic deiodinase expression and protein levels under inflammatory conditions: Evidence from an *in vitro* model. Front Nutr 13: 1773486.
19. First MB, Spitzer RL, Gibbon Miriam W, Janet BW. (1997). Structured clinical interview for DSM-IV axis I disorders: SCID-I: clinical version: scoresheet.
20. Hamilton MA (1960) Rating scale for depression. J Neurol Neurosurg Psychiatry 23 :56-62
21. Guy W. (1976) ECDEU Assessment Manual for Psychopharmacology. US Department of Health, Education and Welfare: 217-222.
22. Ware JE, Sherbourne CD. (1992). The MOS 36-Item short-form health survey (SF-36): I. Conceptual framework and item selection. Med Care 30: 473-483.
23. Djokic G, Korcok D, Djordjevic V, Agic A, Rankovic A, Djukic D. (2017). The effects of S-adenosyl-L-methionine-vitamin B complex on mild and moderate depressive symptoms. Hippokratia 21: 140.
24. Wyrwich KW, Tierney WM, Babu AN, Kroenke K, Wolinsky FD. (2005). A comparison of clinically important differences in health-related quality of life for patients with chronic lung disease, asthma, or heart disease. Health Services Research 40: 577-592.
25. Kirsch I. (2015). Antidepressants and the placebo effect. Z Psychol 222: 128-134.

26. Turner EH, Matthews AM, Linardatos E, Tell RA, Rosenthal R. (2008). Selective publication of antidepressant trials and its influence on apparent efficacy. N Engl J Med 358: 252-260.

27. Leucht S, Fennema H, Engel R, Kaspers–Janssen M, Lepping, P, et al. (2013). What does the HAMD mean?. J Affect Disord 148: 243-248.

28. Walsh BT, Seidman SN, Sysko R, Gould M. (2002). Placebo response in studies of major depression: Variable, substantial and growing. JAMA 287: 1840-1847.

29. Csiszar A, Labinskyy N, Pinto JT, Ballabh P, Zhang H, Losonczy G, et al. (2006) Anti-inflammatory effects of resveratrol: Possible role of NF-κB inhibition. Am J Physiol Heart Circ Physiol 291:169-176.

30. Zhang M, Izumi I, Kagamimori S, Sokejima S, Yamagami T, Liu Z. (2009) Taurine attenuates LPS-induced inflammatory responses via inhibition of NF-κB and MAPK signaling. Adv Exp Med Biol 643: 303-312.

31. Dagostin Ferraz S, Kuyunga L, Rech P, Rodrigues Uggioni ML, Rodrigues Candido AC, et al. (2026). Sexual dysfunction associated with selective serotonin reuptake inhibitors in adults with depression: A systematic review and meta-analysis. Euro J Clin Pharmacol 82:82.

32. Popovic D, Vieta E, Fornaro M, Perugi G. (2015). Cognitive tolerability following successful long term treatment of major depression and anxiety disorders with SSRi antidepressants. J Affect Disord 173: 211-215.