Dietary supplements and herbal remedies for premenstrual syndrome (PMS): a systematic research review of the evidence for their efficacy

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Abstract Many women with PMS use alternative therapies, although there has been little research to demonstrate their efficacy. This systematic review provides a comprehensive discussion of dietary supplements and herbal remedies commonly used for premenstrual syndrome (PMS), including calcium, magnesium, vitamin B6, evening primrose oil, Vitex agnus castus, ginkgo biloba and St John’s Wort. Randomized controlled trials of magnesium and evening primrose oil have produced conflicting results, in contrast to the substantial evidence for the efficacy of calcium and vitamin B6. There are insufficient data to advocate the use of ginkgo biloba, Vitex agnus castus and St John’s Wort, although preliminary data seem supportive. Greater standardization of PMS diagnosis and assessment, with randomized, double-blind, placebo-controlled trials using larger, representative samples, strict, prospectively confirmed diagnostic criteria and assessment of treatment efficacy, would help to clarify the role of these alternative PMS treatments. Although much of the clinical research is preliminary and/or inadequately controlled, this review will be relevant to the practicing clinician looking for greater understanding of the alternative therapies available to their patients with PMS.

Introduction
This paper presents a systematic research review of various dietary and herbal interventions used by women suffering from premenstrual syndrome (PMS). PMS is a cyclical condition occurring 7–10 days before the onset of menstruation, and is relieved shortly after menstrual flow begins (Reid, 1991). The most commonly reported symptoms include depression, anxiety, irritability and mood swings, as well as physical symptoms such as breast tenderness and bloating. PMS involves milder symptoms than Premenstrual Dysphoric Disorder (PMDD) (Ismail & O’Brien, 2001), although PMS symptoms are severe enough to disrupt women’s lives (Shaw et al., 2003). PMDD
characterizes a subgroup of women whose symptoms are particularly severe and is confirmed using DSM-IV-TR criteria.

**PMS assessment**

The diagnosis of PMS is based on the pattern of symptoms over the menstrual cycle. Both retrospective and prospective measures are used for this purpose. Retrospective questionnaires promote incorrect symptom timing, bias due to cultural expectations and heavy reliance upon memory of symptoms (Connolly, 2001), resulting in an inflated estimate of symptom severity (De Souza et al., 2000). Prospective daily self-report instruments are the only accepted means of confirming PMS diagnosis (Steiner & Wilkins, 1996). These are easy to administer, less reliant on memory (Haywood et al., 2002) and highlight intercycle variability in symptom type and severity (Connolly, 2001). However, they are demanding to complete and may bias symptom patterns though nonadherence (Connolly, 2001).

Various measures have been used to prospectively confirm PMS diagnosis. Budeiri et al. (1994) identified over 65 instruments, but concluded that there is not yet agreement about which is the most appropriate. At least five different daily diaries are widely used but there is no consensus as to which one is best (Steiner et al., 2003).

The diagnosis of PMS is also based on symptom severity through the application of severity criteria to symptoms, such that an increase of at least 30% from the follicular to luteal phase scores is required to confirm PMS (NIMH, 1983).

Many women with PMS use alternative therapies (Girman et al., 2003), even though the efficacies of these are not established (Domoney et al., 2003). This review will evaluate evidence for the effectiveness of dietary and herbal interventions for PMS assessed by randomized, double-blind, placebo-controlled trials, in women whose PMS was diagnosed using validated measures. The studies considered in this review did not distinguish between PMS and PMDD.

**Methods**

*Selection criteria*

For review inclusion, studies were required to include a placebo/comparison group, as the placebo effect has been shown to be large in women with PMS (Freeman & Rickels, 1999). They were required to test the efficacy of one treatment, taken for at least one cycle, taken throughout or premenstrually. Participants had to be randomized to treatments in the case of parallel designs, or have treatment orders counterbalanced in the case of crossover designs.

Studies required participants of reproductive age, with PMS or PMDD, diagnosed prospectively or retrospectively. Few trials employed prospective diagnosis or assessment of efficacy hence, in order to provide a comprehensive review, retrospective measures were included. Women had to have no other pre-existing psychiatric conditions (e.g. depression, anxiety), although studies including women presenting with depression or anxiety only premenstrually were included.

Studies employing outcome measures which examined combined PMS symptoms, global scores or specific symptoms, e.g. cyclical breast pain, were included. Trials including women taking oral contraceptives were also included.
**Search strategy**

*Electronic databases*


A general search on these databases revealed dietary supplements and herbal remedies used for PMS, including vitamin B6, magnesium, calcium, *Vitex agnus castus*, evening primrose oil, St John’s Wort and ginkgo biloba supplements. Databases were searched using all Latin and English names for these supplements. Hence, the following keywords were used:

- Pms, pmt, pmdd, llpd, llpdd, premenstrual syndrome, pre menstrual syndrome, pre-menstrual syndrome, premenstrual syndrome, premenstrual tension, pre menstrual tension, pre-menstrual tension, premenstrual dysphoria, pre-menstrual dysphoria, pre menstrual dysphoria, premenstrual dysphoric disorder, pre-menstrual dysphoric disorder, pre menstrual dysphoric disorder, late luteal
- Vitex, agnus castus, vitex agnus castus, vitex agnus-castus, chaste tree, chasteberry, chaste-berry, monk’s pepper, monks pepper, hemp tree, agnolyt, agnufemil, castufemin, cefanorm, femicur, gynocastus, hewekliman, kytta-femin, strotan, agnomens
- Evening primrose oil, oenothera biennis, evening primrose, primrose oil, oenothera, biennis, fever plant, oep, sundrop, essential fatty acids, efamol
- Calcium, calcium supplements, calcium therapy
- Magnesium, magnesium therapy
- Vitamin B6, vitamin B6, vitamin b-6, vitamin B-6, vitamin therapy, vitamins, pyridoxine, B-vitamins, B vitamins, pyridoxine hydrochloride
- St john’s wort, st johns wort, hypericum perforatum, hypericum, perforatum, hypericin, hypericins, kira
- Gingko, gingko biloba, ginko, ginko biloba, biloba, living fossil, Japanese Silver Apricot, Kew Tree, Maidenhair Tree, Yinsing
- Alternative therapy, alternative therapies, herbal therapy, nutritional supplements
- Clinical trial, trial, randomized controlled trial, controlled trial, randomized, randomized controlled trial, blind, double blind, double-blind, doubleblind, crossover, cross-over, parallel, prospective, retrospective

There were 113 articles remaining when duplicates were removed, with 32 articles kept as trials relevant to the research area. Seven articles did not meet the selection criteria, five of which had no placebo or comparison group (Berger et al., 2000; Brush et al., 1988; Larsson et al., 1989; Loch et al., 2000; Stevinson & Ernst, 2000). Two articles were excluded as they tested the efficacy of more than one treatment. Krutan Berman et al. (1990) tested the efficacy of pyridoxine for PMS, in combination with a dietary intervention, while Callender et al. (1988) tested evening primrose oil using efamol tablets which also included efavit (containing vitamin C, pyridoxine, niacin, and zinc sulfate). Hence, 25 studies meeting the selection criteria were retained (see Table 1). One additional article (Ockerman et al., 1986) was identified from the reference lists from review articles in this area.
Data synthesis for the dietary supplements and herbal remedies for PMS

Two studies of calcium, four of magnesium, 10 of B6, four of evening primrose oil, four of Agnus castus, one of St. John’s Wort and one of gingko biloba met the inclusion criteria. Fifteen trials suggested some benefit of the treatment under investigation, while 11 trials found no such benefit.

Table 1 describes and evaluates these studies. The trials are ordered alphabetically and sub-divided into studies finding positive and negative effects for each treatment. Aspects of the methodological quality (e.g. sample size, design, dose and duration of intervention, screening and assessment tools employed) are considered in order to provide a context for discussion of the reliability of the results. The table assumes that studies excluded women taking the oral contraceptive pill, unless otherwise stated.

Two well-designed trials rigorously assessed the efficacy of calcium supplementation for PMS (Thys-Jacobs et al., 1989, 1998). The similarities between their findings suggest that calcium supplementation of at least three cycles may be of benefit to women suffering from PMS.

Positive evidence was also found for vitamin B6. A systematic review to evaluate the efficacy of vitamin B6 for the treatment of PMS identified 25 published trials and included nine trials, representing 940 patients (Wyatt et al., 1999). The overall odds ratio for efficacy of B6 was 2.32 (1.95–2.54). Wyatt et al. suggest that doses of vitamin B6 up to 100 mg/day may benefit premenstrual depression and other symptoms. However, conclusions from the meta-analysis were limited by the methodological weaknesses of some of the trials included. Findings from studies assessing vitamin B6 in this review are also mixed, although studies which demonstrated benefits appeared to be methodologically stronger. The evidence suggests that continuous vitamin B6 treatment at doses of 50 to 150 mg/day may be beneficial for some PMS symptoms, since the intermittent treatment (at 50 to 300 mg/day) did not prove effective (Diegoli et al., 1998; Mal mgren et al., 1987; Stokes & Mendels., 1972). However, more trials, using stricter diagnostic criteria, are required to confirm its benefit.

Trials looking at magnesium supplementation produced mixed findings and many methodological limitations were apparent. Although most trials evaluating Agnus castus treatment reported positive effects, many studies also suffered methodological problems. Though some studies suggest evening primrose oil may benefit PMS symptoms (Ockerman et al., 1986; Puolakka et al., 1985), currently the evidence is not convincing, especially as the most methodologically sound study (Collins et al., 1993) found no benefit for mood or physical symptoms. Therefore, trials with longer treatment durations, tighter controls and larger samples are required to evaluate Agnus castus, evening primrose oil and mg supplementation in PMS.

Only single studies have been performed to test the efficacy of St John’s Wort and gingko biloba, so further investigation of these therapies is needed. Hicks et al. (2004) suggested that their study had insufficient statistical power to demonstrate the efficacy of the dose of St John’s Wort that they used (600 mg, standardized to 0.3% of hypericin/day). Most studies have used a dose of 900 mg/day standardized to 0.3% hypericin for depression (Szegedi et al., 2005), and this is the dose recommended for depression by most manufacturers of St John’s Wort. There is currently no recommended dose for PMS. Tamborini and Taurelle (1993) found gingko biloba to benefit congestive PMS symptoms, particularly breast tenderness. However, the sample of PMS sufferers studied was atypical in that women were required to report
<table>
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<tr>
<td><strong>Calcium (Ca)</strong></td>
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<td>Thys-Jacobs et al.</td>
<td>N=60, 33</td>
<td>R, DB CO, PC</td>
<td>2 tablets providing 1000 mg elemental Ca/d; 3 cycles</td>
<td>14 symptoms rated daily on a 4-pt scale; 1 cycle</td>
<td>Daily symptom change; global assessment measured retrospectively</td>
<td>✓ negative affect, water retention, pain; retrospective assessment</td>
<td>Well designed trial. No washout. Prospective diagnosis but for only 1 cycle.</td>
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<tr>
<td>Thys-Jacobs et al.</td>
<td>N=479, 441</td>
<td>R, DB PGs, PC, MC</td>
<td>2 × 2, 750 mg CaCO3 tablets/d (1200 mg elemental Ca/d); 3 cycles</td>
<td>17 symptoms (4 factors: negative affect, water retention, food and pain) rated daily on a 4-pt scale; 2 cycles</td>
<td>Symptom complex score during luteal and menstrual phases; factor scores; rescue medication used</td>
<td>✓ symptom complex scores; all symptom factors</td>
<td>Well designed trial. Placebo treatment not specified. Strict diagnostic criteria. OC users included, although no difference between users/non-users found.</td>
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<td><strong>Magnesium (mg)</strong></td>
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<td>Facchinetti et al.</td>
<td>N=32, 28</td>
<td>R, DB PGs, PC</td>
<td>3 tablets providing 360 mg mg ion/d from cycle day 15; 2 cycles</td>
<td>DSM III-R, MDQ daily during the 2nd and 4th cycles</td>
<td>✓ total MDQ score, especially negative affect and arousal</td>
<td></td>
<td>Small sample.</td>
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<td>Walker et al.</td>
<td>N=54, 24</td>
<td>R, DB CO, PC</td>
<td>200 mg of mg as mgO; 2 cycles</td>
<td>22 symptoms daily on a 4-pt scale, covering 6 categories (anxiety, craving, depression, hydration, other and total)</td>
<td>✓ hydration symptoms only (weight gain, swelling, breast tenderness and abdominal bloating)</td>
<td></td>
<td>No washout. Retrospective diagnosis. Low dose. OC users included. No baseline diary measurements taken.</td>
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Table 1. (Continued.)

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<tr>
<td>De Souza <em>et al.</em> (2000)</td>
<td><em>N</em>=44, 37 completed; 16% dropout</td>
<td>R, DB CO, PC</td>
<td>Each daily for 1 cycle: 1) 200 mg mg, as mgO 2) 50 mg B6 3) 200 mg mg+50 mg B6 4) placebo</td>
<td>MHQ; 1 mth menstrual diary</td>
<td>30 symptoms daily on a 5-pt scale, covering 6 categories (anxiety, craving, depression, hydration, other and total)</td>
<td>✓ except combined treatment, which reduced mild anxiety related symptoms</td>
<td>OC users included (18%). Diagnosis methods not specified. Treatment for only 1 mth. No washout.</td>
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<tr>
<td>Walker <em>et al.</em> (2002)</td>
<td><em>N</em>=85</td>
<td>R, DB CO, PC, sorbitol</td>
<td>2 of the following for 2 cycles each, with 1 mth washout: placebo, mg (200, 350 or 500 mg/d, containing 1050, 813 and 717 mg of sorbitol)</td>
<td>MHQ</td>
<td>20 symptoms daily on a 5-pt scale, covering 5 categories (anxiety, craving, depression, hydration, total)</td>
<td>✓ Sorbitol significantly better than mg for anxiety and total PMS scores</td>
<td>OC users included (28%).</td>
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<tr>
<td><em>Vitamin B6 (B6)</em> Abraham &amp; Hargrove (1980)</td>
<td><em>N</em>=25</td>
<td>R, DB CO, PC</td>
<td>1 x B6 tablet/d containing 500 mg of pyridoxine HC1; 3 cycles</td>
<td>MSQ (Abraham, 1980)</td>
<td>19 symptoms daily on a 4-pt scale</td>
<td>✓ total symptom score; premenstrual weight gain</td>
<td>Only 3 women with premenstrual weight gain included. Completer rate inconsistent. Unclear when symptoms were rated for diagnosis.</td>
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<td>Barr (1984)</td>
<td><em>N</em>=48, 36 analysed; 25% dropout assumed</td>
<td>R, DB CO, PC</td>
<td>1 x 100 mg pyridoxine HCl/d from cycle days 10–3; 2 cycles</td>
<td>Not specified</td>
<td>8 symptoms daily for 2 wks prior to menstruation</td>
<td>✓ overall scores</td>
<td>OC users included. Entry criteria not specified. Symptoms only recorded with positive/negative responses.</td>
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<td>Doll et al. (1989)</td>
<td>N=68, 32 completed; 53% dropout; moderate to severe PMS</td>
<td>R, DB CO, PC</td>
<td>50 mg of pyridoxine/d; 3 cycles</td>
<td>9 symptoms (emotional, somatic and menstrual) rated on a 4-pt scale; 1 cycle</td>
<td>9 symptoms on a 4-pt scale throughout treatment</td>
<td>✓ emotional type symptoms only—depression, irritability, tiredness</td>
<td>OC users included. No washout. It was not specified how the scale was used for diagnosis or treatment assessment.</td>
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<tr>
<td>Kendall &amp; Schnurr (1987)</td>
<td>N=74, 55 completed; (B6, 29; Pl, 26); 26% dropout</td>
<td>R, DB PGs, PC</td>
<td>3 × 50 mg B6 tablets/d; 2 cycles</td>
<td>PAF (Halbreich et al., 1982)</td>
<td>MDQ, every other day</td>
<td>✓ autonomic reactions (dizziness, vomiting); behaviour changes (poor performance, decreased social activities) only</td>
<td>Baseline MDQ not used for exclusion. Half the women in each condition received capsules and half tablets.</td>
</tr>
<tr>
<td>Williams et al. (1985)</td>
<td>N=617, 434 completed; 30% dropout</td>
<td>R, B PGs, PC</td>
<td>100 mg pyridoxine tablet/d; 3 cycles. The dose could be doubled/halved by the patients.</td>
<td>Through the general practitioner, if menstruation relieved 1 or more symptom</td>
<td>Symptom rating during the last week of each cycle</td>
<td>✓ for final assessment compared to entry but not for individual symptoms</td>
<td>Retrospective diagnosis and treatment assessment. ‘Other medication’ could be taken. Many women changed their dose.</td>
</tr>
<tr>
<td>Diegoli et al. (1998)</td>
<td>N=120 (30 in each group)</td>
<td>R, DB CO, PC</td>
<td>One for 3 cycles: 1) 300 mg pyridoxine/d from day 15 2) 3 × 0.25 mg of alprazolam/d from day 15 3) 10 mg fluoxetine/d 4) 20 mg propanol/d, 40 mg when menstruating</td>
<td>24 symptoms rated retrospectively on a 4-pt scale</td>
<td>24 symptoms on a 4-pt scale at the end of each cycle</td>
<td>✓ only for the pyridoxine group</td>
<td>Doses and frequency of treatment differed between groups. Retrospective diagnosis and treatment assessment. It was unclear when treatment effect was assessed.</td>
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<td>Hagen et al. (1985)</td>
<td>N=42, 34 completed; 19% dropout</td>
<td>R, DB CO, PC</td>
<td>2 × 50 mg pyridoxine tablets/d; 2 cycles</td>
<td>Interview conducted by the research team</td>
<td>VAS at baseline and after each treatment; ranking of 6 symptoms, adding others</td>
<td>×</td>
<td>Treatment order not fully counter-balanced. When rating, women were allowed to see their previous ratings, and it was unclear when this was performed.</td>
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<tr>
<td>Malmgren et al. (1987)</td>
<td>N=19</td>
<td>DB, CO PC</td>
<td>300 mg pyridoxine/d from cycle day 15; 1 cycle</td>
<td>MDQ; STAI (Spielberger et al., 1970) on cycle days 5–7 and 25–27</td>
<td>Not specified</td>
<td>×</td>
<td>No washout. B6 and placebo were only given for one cycle each.</td>
</tr>
<tr>
<td>Smallwood et al. (1986)</td>
<td>N=42, severe cyclical mastalgia</td>
<td>R, DB CO, PC</td>
<td>200 mg B6 (benadon)/d; 2 cycles</td>
<td>Not specified</td>
<td>Monthly, by a clinician within the last 5 days of the cycle; daily VAS for breast pain and tenderness; paracetamol requirements</td>
<td>× for all measures</td>
<td>Only women having severe pain premenstrually for at least 6 consecutive mths included. Exclusion of OC users not stated. Method of diagnosis not specified. Only a small proportion of symptoms assessed.</td>
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<td>Stokes &amp; Mendels</td>
<td>N=13, premenstrual tension, depression</td>
<td>R, DB CO, PC</td>
<td>50 mg B6 or placebo/d for 18 days/mth, for 8–12 mths, with the order of placebo and B6 months being random</td>
<td>Not specified</td>
<td>MDQ</td>
<td>✗</td>
<td>Method of diagnosis not mentioned. Tiny sample size. It was unclear for how long each treatment was taken. Treatment assessment method not explicit.</td>
</tr>
<tr>
<td>Evening Primrose Oil (EPO)</td>
<td>N=36, severe PMS</td>
<td>DB, PGs PC, olive oil</td>
<td>8 × 0.5g Efamol capsules/d; 3 cycles</td>
<td>Not specified</td>
<td>Not specified</td>
<td>✓</td>
<td>Treatment resistant sample. Extremely brief report failing to specify diagnosis methods, symptoms measured and measures used.</td>
</tr>
<tr>
<td>Puolakka et al.</td>
<td>N=30, incapacitating PMS</td>
<td>R, CO PC</td>
<td>2 × 3 Efamol capsules from cycle day 15; 4 cycles</td>
<td>19 symptoms rated on a 3-pt scale</td>
<td>19 symptoms on a 3-pt scale on the last treatment day</td>
<td>✓ depression; total score; responder rate: Efamol (62%), placebo (40%)</td>
<td>Placebo treatment not defined. Double-blinded? Retrospective measurement? Exclusion of OC users not specified. Data for only 22 women analysed? Analysis unclear.</td>
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<td>Collins et al. (1993)</td>
<td>$N=68$, 38 completed; 44% dropout</td>
<td>R, DB CO, PC, paraffin oil</td>
<td>$3 \times 4$ Efamol capsules/d for 4 cycles</td>
<td>DSM-III-R criteria; VAS prospective 16 symptom VAS (Hammarbeck et al., 1989)</td>
<td>VAS</td>
<td>$\times$ all mood and physical symptoms</td>
<td>Well controlled study.</td>
</tr>
<tr>
<td>Khoo et al. (1990)</td>
<td>$N=38$; no dropouts; moderate PMS</td>
<td>R, DB CO, PC, liquid paraffin</td>
<td>$8$ EPO capsules/d; $3$ cycles</td>
<td>Retrospective 10 symptom scale</td>
<td>$10$ symptoms (4 psychological, 6 physical) completed retrospectively each cycle</td>
<td>$\times$ total PMS score; psychological, fluid retention, breast, and menstrual symptoms</td>
<td>Dose not stated. Diagnosis process unclear and seemed to be retrospective. It was unclear when symptoms were recorded in each cycle.</td>
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<td>Vitex agnus castus (AC)</td>
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<td>Atmaca et al. (2003)</td>
<td>$N=41$, 38 completed; 7% dropout (fluoxetine, 21; AC, 20) PMDD</td>
<td>R, SB PGs, PC</td>
<td>Fluoxetine or AC (20–40 mg/d); $2$ cycles</td>
<td>DSM-IV; Penn daily symptom reports; $2$ cycles</td>
<td>DSM-IV criteria for PMDD; premenstrual score of the DSR, HAM-D (Hamilton, 1960), CGI-I; agreement of improvement by the authors</td>
<td>$\checkmark$ No significant difference between groups on DSR, CGI-SI scores or responder rates</td>
<td>AC compared to fluoxetine – no placebo group. Participants and raters blinded but prescribing physician not.</td>
</tr>
<tr>
<td>Halaska et al. (1998)</td>
<td>$N=100$, completion: AC 48, placebo 49, 3% dropout</td>
<td>DB, PGs PC</td>
<td>$2 \times 30$ AC drops (1.8ml)/d; $3$ cycles</td>
<td>Not specified</td>
<td>VAS scale</td>
<td>$\checkmark$ breast pain</td>
<td>Only women suffering from mastalgia $&gt;5$ days/cycle included.</td>
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<tr>
<td>Schellenberg (2001)</td>
<td>N=170 (active, 86; placebo 84)</td>
<td>R, DB PGs, PC</td>
<td>1 × 20 mg AC tablet/d; 3 cycles</td>
<td>DSM-III-R</td>
<td>6 symptoms (irritability, mood alteration, anger, headache, other menstrual symptoms including bloating, breast fullness) on a VAS compared to previous 3 cycles; responder rate</td>
<td>✓ combined and individual symptoms (not bloating); responder rates 52% AC v 24% placebo</td>
<td>Assessment scale and timing of symptom rating was unclear. OC users included.</td>
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<tr>
<td>Turner &amp; Mills (1993)</td>
<td>N=600, completion: AC, 105; placebo 112, 64% dropout</td>
<td>R, DB PGs, PC</td>
<td>Treatment; 3 mths</td>
<td>MDQ</td>
<td>MDQ at end of treatment; a shortened version administered at the end of cycles 1 and 2</td>
<td>✓ except for the symptom ‘feel jittery or restless’ and responder rates 25% AC v 16% placebo</td>
<td>Dose and frequency of administration was unclear. Only women high in negative affect included. Huge drop out rate, but evenly distributed across groups.</td>
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<tr>
<td><em>St John’s Wort (SJW)</em> Hicks et al. (2004)</td>
<td>N=169, 125 completed; 26% dropout</td>
<td>R, DB PGs, PC, lactose/cellulose</td>
<td>2 × 300 mg tablets standardized to 900 μg hypericin/d; 2 cycles</td>
<td>Retrospective assessment; 25 symptoms rated daily; 1 cycle</td>
<td>VAS assessing 25 symptoms grouped into 6 categories (anxiety, craving, depression, hydration, other and total)</td>
<td>✓ all symptom subgroups</td>
<td>Although diagnosis was prospectively confirmed, this process was unclear.</td>
</tr>
<tr>
<td>Reference</td>
<td>Sample size</td>
<td>Study design</td>
<td>Dose and duration</td>
<td>Diagnosis</td>
<td>Assessment measures</td>
<td>Outcome</td>
<td>Comments</td>
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<tr>
<td><em>Ginko Biloba</em> Tamborini &amp; Taurelle (1993)</td>
<td>N=165, congestive PMS symptoms</td>
<td>R, DB PGs, PC MC</td>
<td>EGb 761 from cycle day 16; 2 cycles</td>
<td>Observation of 1 menstrual cycle</td>
<td>Daily scale measuring congestion, breast tenderness and mood; practitioner observation premenstrually before and after treatment</td>
<td>✓ congestive symptoms, particularly breast symptoms</td>
<td>Method of diagnosis not specified.</td>
</tr>
</tbody>
</table>

Key:

**Study design**
- R Randomized
- DB Double-blind
- SB Single-blind
- PC Placebo-controlled
- PGs Parallel groups
- CO Crossover
- MC Multi-centred
- OC Oral contraceptives

**Measures**
- MHQ Mental Health Questionnaire (Warner & Bancroft, 1990)
- MDQ Menstrual Distress Questionnaire (Moos, 1968)
- VAS Visual analogue scale
congestive premenstrual symptoms for 7 days per cycle for the three cycles prior to recruitment.

Discussion

Many women with PMS use alternative therapies, despite the lack of established efficacy (Domoney et al., 2003). This review included 26 trials that assessed the efficacy of seven different dietary supplements and herbal remedies for PMS. The most substantial positive evidence was found for calcium and continuous vitamin B6 treatment. Trials assessing magnesium and evening primrose oil produced conflicting findings, whilst insufficient data were found to advocate the use of *vitex agnus castus*, gingko biloba or St John’s Wort.

The studies considered in this review differed greatly in the diagnostic methods they used. It is generally accepted that prospective daily self-report measures are needed to confirm PMS (Steiner & Wilkins, 1996). Some studies did diagnose by use of the DSM criteria, and confirmed their diagnoses prospectively. However, others relied upon retrospective diagnosis, which has been criticized (Connolly, 2001), since these often result in inflated estimates of symptom severity (De Souza et al., 2000).

The methods used for the assessment of treatment efficacy also differed. Many studies used the total symptom score of a rating scale as their primary outcome measure, and simultaneously considered symptom clusters, and some also considered individual symptoms. This increases the chances of finding symptom effects. Assessment measures were used prospectively with daily symptom ratings or by averaging these ratings across phases in some trials. Others assessed treatments retrospectively, at the end of each cycle or at the end of treatment, using a variety of methods, including questionnaires, interviews (Kendall & Schnurr, 1987; Loch et al., 2000) and general practitioner assessments (Smallwood et al., 1986; Williams et al., 1985). Some authors did not specify their treatment assessment methods (Mal mgren et al., 1987; Ockerman et al., 1986).

Women taking the oral contraceptive, which has previously been used as a PMS treatment (Girman et al., 2003), were not excluded from some studies, while others focused on specific groups of women, including women with ‘premenstrual tension depression’ (Stokes & Mendels, 1972), severe cyclical mastalgia (Smallwood et al., 1986) and congestive PMS symptoms (Tamborini & Taurelle, 1993). It is difficult to compare such studies with those examining a more representative sample.

Conclusion

The variations apparent in diagnostic procedures, assessment methods, and outcome measures make it difficult to assess treatment efficacy (Connolly, 2001). More consensus about the diagnosis, measurement and assessment of PMS is required, as are randomized, double-blind, placebo-controlled trials. Such carefully controlled trials with strict diagnostic criteria, prospective confirmation of PMS and prospective assessment of symptoms in response to treatment would help to clarify the efficacy of the many alternative treatments used for PMS. At the moment, calcium and continuous vitamin B6 treatment seem likely to be beneficial.
References


John’s Wort (Hypericum perforatum L.) for premenstrual symptoms. *Journal of Alternative and Complementary Medicine, 10*, 925–932.


