Table H-12. Findings on herbal interventions or dietary approaches for ADHD

| **Study**  **N**  **Qualitya**  **Design**  **Age Categoryb** | **Intervention** | **Comparison** | **Follow-up Times** | **Findings–Intervention** | **Findings–Comparison** | **Between group P value** |
| --- | --- | --- | --- | --- | --- | --- |
| **Behavior changes** | | | | | | |
| Shakibaei, 201571  66  Good  RCT  b | Methylphenidate and Ginkgo Biloba | Methylphenidate and placebo | 6 weeks | Parent ADHD Rating Scale IV Inattention  Mean = 13.58 (SD = 3.68)  Parent ADHD Rating Scale IV Hyperactivity-Impulsivity  Mean = 11.54 (SD = 4.42)  Teacher ADHD Rating Scale IV Inattention  Mean = 13.74 (SD = 4.04)  Teacher ADHD Rating Scale IV Hyperactivity-Impulsivity  Mean = 10.93 (SD = 4.06)  Children’s Global Assessment Scale (CGAS)  Mean w/in group change = 8.92 (SD = 7.37) | Parent ADHD Rating Scale IV Inattention  Mean = 14.34 (SD = 4.03)  Parent ADHD Rating Scale IV Hyperactivity-Impulsivity  Mean = 11.37 (SD = 4.11)  Teacher ADHD Rating Scale IV Inattention  Mean = 13.75 (SD = 3.85)  Teacher ADHD Rating Scale IV Hyperactivity-Impulsivity  Mean = 11.2 (SD = 4.43)  CGSA  Mean w/in group change = 8.51 (SD = 5.33) | P<.001  P=0.417  P=0.004  P=0.203  P=0.901 |
| Arnold, 201172  52  Fair  RCT  b | Zinc 15 mg once daily  (> 8 weeks with amphetamine in all groups) | Zinc 15mg twice daily  Placebo | 8 weeks  >8 weeks  8 weeks  >8 weeks  8 weeks  >8 weeks  8 weeks  >8 weeks  8 weeks  >8 weeks    8 weeks  >8 weeks  8 weeks  >8 weeks  8 weeks  >8 weeks | Affective blunting  # patients with outcome = 1  Affective blunting  # patients with outcome = 4  Anxiety  # patients with outcome = 6  Anxiety  # patients with outcome = 9  Depression  # patients with outcome = 7  Depression  # patients with outcome = 11  Irritability  # patients with outcome = 9  Irritability  # patients with outcome = 9 | Affective blunting  # patients with outcome = 0  Affective blunting  # patients with outcome = 0  Anxiety  # patients with outcome = 2  Anxiety  # patients with outcome = 3  Depression  # patients with outcome = 2  Depression  # patients with outcome = 4  Irritability  # patients with outcome = 5  Irritability  # patients with outcome = 6  Affective blunting  # patients with outcome = 1  Affective blunting  # patients with outcome = 6  Anxiety  # patients with outcome = 6  Anxiety  # patients with outcome = 5  Depression  # patients with outcome = 5  Depression  # patients with outcome = 9  Irritability  # patients with outcome = 10  Irritability  # patients with outcome = 14 | NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR |
| Mohammadpour, 201673  54  Fair  RCT  c | 2000 IU Vitamin D plus MPH | Placebo Vitamin D plus MPH | 2 days | WPREMB morning symptoms  Mean = 2.76 (SD 2.2)  WPREMB evening symptoms  Mean = 8.32 (SD 3.9)  WPREMB total score  Mean = 11.08 (SD 5.5) | WPREMB morning symptoms  Mean = 3.65 (SD 3.1)  WPREMB evening symptoms  Mean = 11.68 (SD 5.4)  WPREMB total score  Mean = 15.34 (SD 7.7) | NS  Significant  Significant |
| **Changes in appetite** | | | | | | |
| Arnold, 201172  52  Fair  RCT  b | Zinc 15 mg once daily  (> 8 weeks with amphetamine in all groups) | Zinc 15mg twice daily  Placebo | 8 weeks  >8 weeks  8 weeks  >8 weeks | Changes in appetite  # patients with outcome = 3  Changes in appetite  # patients with outcome = 15 | Changes in appetite  # patients with outcome = 4  Changes in appetite  # patients with outcome = 8  Changes in appetite  # patients with outcome = 4  Changes in appetite  # patients with outcome = 17 | NR  NR  NR  NR |
| Katz, 201074  120  Fair  RCT  b | Patented herbal preparation | Placebo | 0.5 months | Decreased appetite  # patients with outcome = 1 | Decreased appetite  # patients with outcome = 2 | NR |
| **Changes in standardized symptom scores** | | | | | | |
| Dutta, 201275  86  Good  RCT  b | Memomet syrup (Bacopa monniera 125 mg, Convulvulus pleuricaulis 100 mg, Centella asiatica 100 mg) | Placebo | 4 months | Conners 10-point rating scale (hyperactivity)  Mean Percent Change  48% | Conners 10-point rating scale (hyperactivity) Mean Percent Change  29% | Reported as significant in text |
| Pelsser, 201176  100  Good  RCT  c | Restricted elimination diet | No elimination diet | 5 weeks after intervention started | ADHD rating scale--Parental total score  Mean 24.2 95% CI=19.5, 29.0  ADHD rating scale, teacher total score  Mean 14.3 95% CI=11.6, 17.1  ADHD rating scale, Parent inattention score  Mean 11.3 95% CI=8.9, 13.8  ADHD rating scale, parent hyperactivity and impulsivity score  Mean 12.9 95% CI 10.5, 15.3  ADHD rating scale, Teacher hyperactivity and impulsivity score  Mean 7.8 95% CI= 6.2, 9.5  Abbreviated Conners' scale-Parent  Mean 12.0 95% CI=9.4, 14.6  Abbreviated Conners' scale-Teacher  Mean 6.6 95% CI= 4.9, 8.4  ADHD Rating Scale "Behaviour scores"  Total score  Mean = 9.6 (SD = 6.9)  ADHD Rating Scale "Behaviour scores"  Inattention  Mean = 4.1 (SD = 3.9)  ADHD Rating Scale Hyperactivity and Impulsivity  Mean = 5.3 (SD = 3.9)  Abbreviated Conners Scale  Mean = 5.9 (SD = 3.7) | ADHD rating scale--Parental total score  Mean 1.3 95% CI = 0.2, 2.5  Mean between group change = 23.7  95% CI = 18.6, 28.8  ADHD rating scale, teacher total score  Mean -0.4 95% CI=-1.7, 1.0  Mean between group change = 15.3  95% CI = 12.0, 18.6  ADHD rating scale, Parent inattention score  Mean 0.2 95% CI=-0.4, 0.8  Mean between group change = 11.8  95% CI = 9.1, 14.4  ADHD rating scale, parent hyperactivity and impulsivity score  Mean 0.3 95% CI=-0.6, 1.1  Mean between group change = 11.9  95% CI = 9.3, 14.5  ADHD rating scale, Teacher hyperactivity and impulsivity score  Mean -0.6 95% CI=-1.4, 0.2  Mean between group change = 8.5  95% CI = 6.8, 10.3  Abbreviated Conners' scale-Parent  Mean 0.1 95% CI=-0.7, 0.8  Mean between group change = 11.8  95% CI = 9.2, 14.5  Abbreviated Conners' scale-Teacher  Mean -0.8 95% CI=-1.4, -0.3  Mean between group change = 7.5  95% CI = 5.9, 6.2  ADHD Rating Scale "Behaviour scores"  Total score  Mean = 46.9 (SD = 5.5)  ADHD Rating Scale "Behaviour scores" Inattention  Mean= 23.4 (SD = 26.3)  ADHD Rating Scale Hyperactivity and Impulsivity  Mean = 24.1 (SD = 4.2)  Abbreviated Conners Scale  Mean = 24 (SD = 3.7) | p<.0001  p<.0001  p<.0001  p<.0001  p<.0001  p<.0001  p<.0001  p<.0001 |
| Arnold, 201172  52  Fair  RCT  b | Zinc 15 mg once daily  (> 8 weeks with amphetamine in all groups) | Zinc 15mg twice daily  Placebo  Zinc 15mg twice daily  Placebo  Zinc 15mg twice daily  Placebo  Zinc 15mg twice daily  Placebo | 8 weeks  10 weeks  13 weeks  21 weeks | SNAP parent DSM-IV ADHD symptoms  Mean = 1.92 (SD = 0.54)  CRS-parent  Mean = 1.93 (SD = 0.49)  CRS-Teacher \* zinc vs. placebo  Mean = 1.90 (0.67)  SNAP parent DSM-IV ADHD symptoms  Mean = 1.61 (SD = 0.52)  CRS-parent  Mean = 1.52 (SD = 0.52)  CRS-Teacher \* zinc vs. placebo  Mean = 1.23 (SD = 0.58)  SNAP parent DSM-IV ADHD symptoms  Mean = 1.19 (0.56)  CRS-parent  Mean = 1.08 (SD = 0.45)  CRS-Teacher \* zinc vs. placebo  Mean = 0.9 (SD = 0.65)  SNAP parent DSM-IV ADHD symptoms  Mean = .99 (SD = 0.52)  CRS-parent  Mean = .83 (SD = 0.47)  CRS-Teacher \* zinc vs. placebo  Mean = 1.17 (SD = 0.53) | SNAP parent DSM-IV ADHD symptoms  Mean = 1.47 (SD = 0.65)  CRS-parent  Mean = 1.62 (SD = 0.73)  CRS-Teacher \* zinc vs. placebo  Mean = 1.71 (SD = 0.79)  SNAP parent DSM-IV ADHD symptoms  Mean = 1.9 (SD = 0.63)  CRS-parent  Mean = 1.84 (0.56)  SNAP parent DSM-IV ADHD symptoms  Mean = 1.26 (0.62)  CRS-parent  Mean = 1.21 (SD = 0.75)  CRS-Teacher \* zinc vs. placebo  Mean = 1.40 (0.81)  SNAP parent DSM-IV ADHD symptoms  Mean = 1.47 (0.51)  CRS-parent  Mean = 1.24 (0.5)  SNAP parent DSM-IV ADHD symptoms  Mean = 0.67 (0.38)  CRS-parent  Mean = 0.81 (SD = 0.58)  CRS-Teacher \* zinc vs. placebo  Mean = 0.63 (0.58)  SNAP parent DSM-IV ADHD symptoms  Mean = 1.01 (SD = 0.38)  CRS-parent  Mean = 0.91 (0.43)  SNAP parent DSM-IV ADHD symptoms  Mean = 0.67 (SD = 0.56)  CRS-parent  Mean = 0.8 (SD = 0.59)  CRS-Teacher \* zinc vs. placebo  Mean = 0.94 (0.69)  SNAP parent DSM-IV ADHD symptoms  Mean = 0.82 (0.44)  CRS-parent  Mean = 0.72 (0.52) | NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR  NR |
| Mohammadpour, 201673  54  Fair  RCT  c | 2000 IU Vitamin D plus MPH | Placebo Vitamin D plus MPH | 2 days | CPRS Oppositional  Mean = 55.28 (SD 11.6)  CPRS Cognitive  Mean = 56 (SD 11.8)  CPRS Hyperactive  Mean = 56.92 (SD 11.8)  CPRS ADHD index  Mean = 55.84 (SD 10.2)  ADHD-RS, Inattentive  Mean = 49.80 (SD 31.7)  ADHD-RS, Hyperactive/Impulsive  Mean = 69.40 (SD 22.4)  ADHD-RS, Total score  Mean = 60.44 (SD 22.1) | CPRS Oppositional  Mean = 59.76 (SD 12.1)  CPRS Cognitive  Mean = 57.21 (SD 10.5)  CPRS Hyperactive  Mean = 59.79 (SD 12.4)  CPRS ADHD index  Mean = 56.79 (SD 9.6)  ADHD-RS, Inattentive  Mean = 61.37 (SD 29.5)  ADHD-RS, Hyperactive/Impulsive  Mean = 77.44 (SD 19.5)  ADHD-RS, Total score  Mean = 71.75 (SD 23.6) | NR  NR  NR  NR  NR  NR  NR |
| **Gastrointestinal symptoms** | | | | | | |
| Arnold, 201172  52  Fair  RCT  b | Zinc 15 mg once daily | Zinc 15mg twice daily  Placebo | 8 weeks  >8 weeks  8 weeks  >8 weeks | Stomachaches + other GI  # patients with outcome = 11  Stomachaches + other GI  # patients with outcome = 11 | Stomachaches + other GI  # patients with outcome = 4  Stomachaches + other GI  # patients with outcome = 3  Stomachaches + other GI  # patients with outcome = 18  Stomachaches + other GI  # patients with outcome = 14 | NR  NR  NR  NR |
| Katz, 201074  120  Fair  RCT  b | Patented herbal preparation | Placebo | 0.5 months | GI discomfort  # patients with outcome = 2 | GI discomfort  # patients with outcome = 3 | NR |
| **Mood disorders** | | | | | | |
| Katz, 201074  120  Fair  RCT  b | Patented herbal preparation | Placebo | 0.5 months | Emotional lability  # patients with outcome = 2 | Emotional lability  # patients with outcome = 4 | NR |
| **Motor vehicle collisions** | | | | | | |
| Katz, 201074  120  Fair  RCT  b | Patented herbal preparation | Placebo | 0.5 months | Accidental injury  # patients with outcome = 1 | Accidental injury  # patients with outcome = 2 | NR |
| **Sleep disturbance** | | | | | | |
| Arnold, 201172  52  Fair  RCT  b | Zinc 15 mg once daily | Zinc 15mg twice daily  Placebo | 8 weeks  >8 weeks  8 weeks  >8 weeks | Sleep  # patients with outcome = 0  Sleep  # patients with outcome = 8 | Sleep  # patients with outcome = 1  Sleep  # patients with outcome = 6  Sleep  # patients with outcome = 4  Sleep  # patients with outcome = 16 | NR  NR  NR  NR |
| Katz, 201074  120  Fair  RCT  b | Patented herbal preparation | Placebo | 0.5 months | Sleep disturbance  # patients with outcome = 1 | Sleep disturbance  # patients with outcome = 4 | NR |
| **Suicide ideation** | | | | | | |
| Arnold, 201172  52  Fair  RCT  b | Zinc 15 mg once daily | Zinc 15mg twice daily  Placebo | 8 weeks  >8 weeks  8 weeks  >8 weeks | Harm to self or others  # patients with outcome = 1  Harm to self or others  # patients with outcome = 1 | Harm to self or others  # patients with outcome = 0  Harm to self or others  # patients with outcome = 0  Harm to self or others  # patients with outcome = 0  Harm to self or others  # patients with outcome = 0 | NR  NR  NR  NR |
| **Tics or other movement disorders** | | | | | | |
| Arnold, 201172  52  Fair  RCT  b | Zinc 15 mg once daily | Zinc 15mg twice daily  Placebo | 8 weeks  >8 weeks  8 weeks  >8 weeks | Stereotypical behaviors  # patients with outcome = 3  Stereotypical behaviors  # patients with outcome = 7 | Stereotypical behaviors  # patients with outcome = 1  Stereotypical behaviors  # patients with outcome = 2  Stereotypical behaviors  # patients with outcome = 5  Stereotypical behaviors  # patients with outcome = 9 | NR  NR  NR  NR |

a See Methods section “Quality Assessment of Individual Studies” for definitions of quality assessment ratings.

b Age categories: a = children aged ≤6 years, b = children aged 7-17, c = children of all ages ≤17.

Abbreviations: ADHD=attention deficit hyperactivity disorder; CRS=Conners Rating Scale; SNAP=Swanson, Nolan and Pelham Revision; WPREMB=Weekly Parent Ratings of Evening and Morning Behavior