Supplementary Information

This file contains the following additional tables.

Supplementary Table 1: Dietary, nutraceutical and herbal interventions for treating depression in human subjects found in reviews of dietary interventions for depression.

Supplementary Table 2: Dietary, nutraceutical and herbal interventions for treating depression in preclinical models found in reviews of dietary interventions for depression.

Supplementary Table 3: Lifestyle interventions for treating depression in humans found in reviews of lifestyle interventions for depression

Supplementary Table 4: Psychedelic interventions for treating depression found in reviews of psychedelic interventions for depression.

Supplementary Table 1: Dietary, nutraceutical and herbal interventions for treating depression in human subjects found in reviews of dietary interventions for depression. +, positive effect; -, negative effect; n.s. not significant; Mixed, mixed positive, negative and/or non significant findings.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| *S*-Adenosylmethionine (SAMe) | + |  | + | + (n.s.) | + |  |  | + | + |  |  |  |  |  |
| Folic Acid | + |  |  |  |  |  | + |  | + |  |  |  |  |  |
| B vitamins | +(ns) | + | +/n.s. |  |  |  | + | n.s. |  |  |  |  |  |  |
| Methyl folate | + |  | + |  | + |  |  |  | Mixed |  |  |  |  |  |
| Vitamin B-12 | + |  |  |  |  |  |  |  | n.s. |  |  |  |  |  |
| Omega 3 (EPA+DHA) | + | + | + | + | + |  | + | + | + |  |  |  |  |  |
| Ethyl-EPA | + |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tryptophan | n.s. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DL-Tryptophan | + |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5-HTP | + |  |  |  | + / n.s. |  |  |  |  |  |  |  |  |  |
| Zinc | +/ns |  | + |  |  | + |  |  | + |  |  |  |  |  |
| Vitamin C | +/ns |  |  |  |  |  | n.s. |  |  |  |  |  |  |  |
| Vitamin D3 | + |  | + |  |  |  | n.s. | n.s. | Mixed |  |  |  |  |  |
| Inositol | n.s. |  |  |  | + / n.s. |  |  |  | n.s. |  |  |  |  |  |
| Amino Acids | + |  | + |  |  |  |  |  |  |  |  |  |  |  |
| Creatine | + |  | + |  |  |  |  |  |  |  |  |  |  |  |
| Catechins |  | + |  |  |  |  |  |  |  |  |  |  |  |  |
| Cocoa |  | + |  |  |  |  |  |  |  |  |  |  |  |  |
| Probiotics |  |  | +/n.s |  |  |  |  |  |  |  |  |  |  |  |
| Magnesium |  |  | + |  |  | + |  |  |  |  |  |  |  |  |
| Calcium |  |  | + |  |  |  |  |  |  |  |  |  |  |  |
| Selenium |  |  | n.s. |  |  | + |  |  |  |  |  |  |  |  |
| Caffeine |  |  | + |  | + | +[[1]](#footnote-1) |  |  |  |  |  |  |  |  |
| Curcumin |  |  | + |  |  |  |  |  |  |  |  |  |  |  |
| Hydroxytyrosol |  |  | + |  |  |  |  |  |  |  |  |  |  |  |
| Cannabidiol (CBD) |  |  | n.s. |  |  |  |  |  |  |  |  |  |  |  |
| Gingko Biloba |  |  |  |  |  |  |  | n.s. |  |  |  | n.s. |  |  |
| St. John’s Wort |  |  |  | + | + |  |  | +/n.s. |  |  | + | + | + | + |
| Valerian |  |  |  | + |  |  |  |  |  |  |  |  |  |  |
| Rhodiola |  |  |  |  | +/n.s. |  |  |  |  | + | n.s. |  | + | + |
| Empower plus |  |  |  |  | Mixed |  |  |  |  |  |  |  |  |  |
| Chromium |  |  |  |  | Mixed |  |  |  |  |  |  |  |  |  |
| Acetyl L-carnitine |  |  |  |  | + |  |  |  |  |  |  |  |  |  |
| N-acetyl cystein |  |  |  |  | +/Mixed |  |  |  |  |  |  |  |  |  |
| Alpha lipoic acid |  |  |  |  | Mixed |  |  |  |  |  |  |  |  |  |
| Antioxidants |  |  |  |  |  | + |  |  |  |  |  |  |  |  |
| Coenzyme Q10 |  |  |  |  |  | + |  |  |  |  |  |  |  |  |
| Crocin (Saffron) |  |  |  |  |  | + |  |  |  | + | + | + | + | + |
| Lavender |  |  |  |  |  |  |  |  |  | + | n.s. | + | + | + |
| Borage(Echium) |  |  |  |  |  |  |  |  |  | +(n.s.) | n.s. |  | + | + |
| Chamomile |  |  |  |  |  |  |  |  |  |  | n.s. |  |  |  |
| Ginseng |  |  |  |  |  |  |  |  |  |  | n.s. |  | + |  |
| Kava |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dan zhi xiao yao |  |  |  |  |  |  |  |  |  |  |  |  |  | + |

Supplementary Table 2: Dietary, nutraceutical and herbal interventions for treating depression in preclinical models found in reviews of dietary interventions for depression.

|  |  |  |  |
| --- | --- | --- | --- |
| Substance | Evidence | Source/ Scientific name of organism | Geographical range |
| Southern Maidenhair Fern | Preclinical improvement (16, 17) | Adiantum capillus-veneris | USA |
| Bell Agapanthus | Preclinical improvement (18) | Agapathius campanulatus | South Africa |
| Flat-crown Albizia | Preclinical improvement (19, 20) | Albizia adianthifolia | Tropical & S. Africa, E. & E. Central Madagascar. |
| Tarragon | Preclinical improvement (21, 22) | Artemesia dracunculus | S. Europe to W. Asia. |
| Bushman Poison Bulb | Preclinical improvement (18) | Boophone disticha | Eastern and southern Africa |
| CBD | Preclinical improvement (23)  (24) | Cannabis sativa | Native to Eastern and southern Africa  Cultivated worldwide |
| THC | Preclinical improvement (25) | Cannabis sativa | See above |
| Gotu Kola | Preclinical improvement (26) | Centella asiatica | E. Asia and Australia |
| Camphor Tree | Preclinical improvement (27) | Cinnamomum camphora | E. Asia |
| Hoodia | Preclinical improvement (28) | Hoodia gordonii | Namibia, South Africa |
| St. John’s Wort | Preclinical improvement (29)  (30) | Hypericum perforatum | Europe, including Britain, south and east to N. Africa, the Azores, Madeira and W. Asia. |
| Wrinkled St. John's Wort | Preclinical improvement (31) | Hypericum revolutum | Nigeria to Bioko, Eritrea to E. Cape Prov., SW. Arabian Peninsula |
| Namib Bottle Tree | Preclinical improvement (32) | Maerua angolensis | Drier areas in Tropical Africa - Mauritania to Somalia, south to S. Africa. |
| Neem | Preclinical improvement (33) | Melia azedrach | native to Southeast Asia and northern Australia  naturalised include parts of central and southern Australia, southern Europe, southern and eastern Africa, southern USA, Mexico, Central America, the Caribbean, tropical southern America and many Pacific islands. |
| Spearmint | Preclinical improvement (34) | Mentha spicata | Central Europe |
| White's Ginger | Preclinical improvement (18) | Mondia whitei | Tropical Africa - Senegal to Sudan and Kenya, south to Namibia, Zambia, Zimbabwe and Mozambique. |
| African Olive | Preclinical improvement (35-37) | Olea europaea cuspidate | Eritrea to S. Africa, Mascarenes, Arabian Peninsula to China (Yunnan). |
| Rosemary | Preclinical improvement (38-41) | Rosmarinus officinalis | S. Europe to W. Asia. |
| Serendipity Berry | Preclinical improvement (42) | Securidaca longipedunculata | Africa |
| Kanna | Preclinical improvement (43) | Sceletium tortuosum | South Africa |
| Pink Peppercorn | Preclinical improvement (44) | Schinus mole | Southern and western S. America - Argentina, Uruguay, Paraguay, Brazil, Bolivia, Peru, Ecuador. |
| Honeybush | Preclinical improvement (18) | Xysmalobium undulatum | astern parts of southern Africa (found in all the provinces of South Africa and in Namibia, Botswana, Lesotho and Swaziland). Its range extends to tropical Africa as far north as Kenya. |
| Buffalo Thorn | Preclinical improvement (45) | Ziziphus mucronate | South Africa northwards to Ethiopia and Arabia. |
| Reishi | Alleviates depression like behaviour in mice (46, 47) | Ganoderma lucidum | Europe and parts of China, naturalized to USA |
| Lion’s Mane | Alleviates depression like behaviour in mice (48) | Hericium erinaceus | North America, Europe, and Asia |
| Polygala | Alleviates depression like behaviour in mice (49) | genus of flowering plants | Temperate zones and tropics |
| Spirulina | Lower immobility time in FST[[2]](#footnote-2) (50, 51) | Spirulina platensis | Widely distributed in alkaline lakes, ponds, and brackish waters |
| Chlorella | Improvement in preclinical models (52) | Chlorella vulgaris | Global distribution in various aquatic environments |
| Hijiki | Improvement in preclinical models (53) | Sargassum fusiforme and Pyropia yezoensis or Pyropia tenera | Western Pacific, including China, Japan, and Korea |
| Sea Lettuce | Improvement in preclinical models (54) | Ulva lactuca | Worldwide, commonly found in coastal areas |
| Wakame | Improvement in preclinical models (53) | Undaria pinnatifida and Pyropia yezoensis or Pyropia tenera | Japan, Korea |
| Seaweed | Improvement in preclinical models (55) | Seaweed (general) | Worldwide |
| Botryococcus braunii | Improvement in preclinical models (56) | Botryococcus braunii | Global distribution in freshwater ecosystems |
| Chlorella | Improvement in preclinical models (57) | Chlorella vulgaris | Global distribution in various aquatic environments |
| Haematococcus | Improvement in preclinical models (58) | Haematococcus pluvialis | Worldwide distribution in freshwater habitats |
| Nizamuddinia zanardinii | Improvement in preclinical models (59) | Nizamuddinia zanardinii | Mediterranean region, Red Sea, Arabian Sea |
| Stoechospermum marginatum | Improvement in preclinical models (59) | Stoechospermum marginatum | Indian and Pacific Oceans, including the Red Sea |
| Sargassum swartzii C. Agardh | Improvement in preclinical models (59) | Sargassum swartzii C. Agardh | Indian and Pacific Oceans, including the Red Sea |
| Solieria filiformis | Improvement in preclinical models (60) | Solieria filiformis | Atlantic and Pacific Oceans |
| Sea Lettuce | Improvement in preclinical models (61) | Ulva sp. | Worldwide distribution in coastal areas |
| Brazilin | Alleviates depression like behaviour in mice (62) | Brazilwood tree (Caesalpinia ssp.) | Brazil |
| Catechins | Reduced immobility time in forced swimming and tail suspension tests and lowered serum levels of corticosterone and adrenocorticotrophic hormone | Tea |  |
| Resveratrol | Alleviates depression like behaviour in mice (63) | Grapes |  |
| Anthocyanidins | Alleviates depression like behaviour in mice (64) | Berries |  |
| Lemon Balm | Evidence of anti-depressant effect in humans (65) | Melissa officinalis | Europe, Asia, North Africa |
| Mexican Bay | Improvement in preclinical mouse model (66) | Litsea glaucescens | Mexico, Central America |
| St. John's Wort |  | Hypericum perforatum L | Worldwide |
| Lavender | Improvements in human depression (67) | Lavandula angustifolia Mill. (Lamiacae) | Mediterranean region, Europe, Asia, North Africa |
| Essential oils of cataia | Improvements in mouse models(68) | Pimenta pseudocaryophyllus (Gomes) L.R. Landrum (Myrtaceae) | Brazil |
| Sensitive Plant | Improvement in rat model (69) | Mimosa pudica (Fabaceae) | Native to South America, now widespread tropical distribution |
| Alkaloid extract of Cherimoya | Improvement in mouse model (70) | Annona cherimola Mill.(Annonaceae) | Andes Mountains in South America, now grown in various regions |
| Mexican Tarragon | Improvement in rat model (71) | Tagetes lucida Cav. (Asteraceae) | Central and South America |
| Bugambilia glabra extract | Improvement in rat models (72) | Bougainvillea spectabilis Willd | Puebla, Coxcatlán |
| Kava kava | Improvement in symptoms in human subjects(73) | Piper methysticum G. Foster | South Pacific |
| Valerian | Improvements in human subjects (74, 75) | Valeriana officinalis L. | Europe, Asia |
| Novel herbal treatment | Improvements in mouse models (76) | [*Crataegus pinnatifida*](https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/crataegus-pinnatifida), *Triticum aestivu*, [*Lilium*](https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/lilium)*brownie* and *Fructus zizyphi jujubae* |  |
| Banxia houpu | Improvement in rat model (77) | Pinellia ternata, Poria cocos, Magnoliaofficinalis,Perilla frutescens and Zingiber officinale | China |

Supplementary Table 3: Lifestyle interventions for treating depression in humans found in reviews of lifestyle interventions for depression. +, positive effect; -, negative effect; n.s. not significant; Mixed, mixed positive, negative and/or non significant findings.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (78) | (79) | (80) | (81) | (82) | (83) | (84) | (85) | (86) |
| Whole foods diet | + |  |  |  | + |  |  |  |  |
| Mediterranean diet |  |  |  | + |  |  |  |  |  |
| Exercise | ++ |  |  | + | + | + |  |  |  |
| Hobbies | Limited evidence |  |  |  |  |  |  |  |  |
| Meditation | + | + |  |  |  |  |  |  |  |
| Sleep | ++ |  |  | + |  | + |  |  |  |
| Natural environment | ++ |  |  |  | + |  |  |  |  |
| Animals | + |  |  |  |  |  |  |  |  |
| Socialization | ++ |  |  |  |  |  |  |  |  |
| Smoking | - |  |  |  | - | - |  |  |  |
| Alcohol | - |  |  |  | Mixed | Mixed |  |  |  |
| Combined healthy lifestyle |  | + | + |  |  |  | ++ | ++ | ++ |

Supplementary Table 4: Psychedelic interventions for treating depression found in reviews of psychedelic interventions for depression. +, positive effect; -, negative effect; n.s. not significant; Mixed, mixed positive, negative and/or non significant findings.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (88) | (89) | (90) | (91) | (92) | (93) | (94) | (95) | (96) | (97) | (98) | (99) | (100) | (101) |
| Psychedelic (any) |  |  | + |  | + | + |  |  | + |  | + (n.s.) |  |  | ++ |
| Ayahuasca |  | + |  | + |  |  |  |  | + | + |  |  |  |  |
| Psilocybin |  | + |  | + |  |  | + | + | + | + |  | + | + |  |
| Psychedelic- assisted psychotherapy |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LSD |  | + (n.s.) |  | + |  |  |  |  | + | + |  |  |  |  |
| MDMA |  |  |  |  |  |  |  |  |  | + |  |  |  |  |

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1. Studies tested consumption of coffee and/or tea [↑](#footnote-ref-1)
2. In Forced swim test (FST), which is often used as a mouse measure of depression. Immobility time is associated with depressive phenotype. [↑](#footnote-ref-2)