Solubility Testing Procedure:

Solubility testing was performed by adding 500 µL of solvent to 250 mg of extract, mixing by sonication, and then adding additional solvent. Vortexing is done only where specified in the table below, as some materials form a froth or foam upon vortexing or strong agitation. At regular intervals, the sample is centrifuged, the supernatant is removed, and the pellet is weighed. This process is repeated until the pellet is dissolved completely, or until the pellet reaches constant weight. If the pellet remains, it is then dried to constant weight, and that information is used to adjust the final solubility.

Solutions are refrigerated overnight and then brought back to room temperature. If the material is no longer fully in solution, the vial is sonicated for up to 15 minutes to attempt to re-solubilize the material.

| **Botanical Extract** | **DMSO solubility (~mg/mL)** | **Mixing protocol\*** | **Sonication time required after Refrigeration\*\* (min)** | **Comments** |
| --- | --- | --- | --- | --- |
| Ephedra | Partially soluble | Sonicate  Centrifuge | NA | At 62.5 mg/mL, Ephedra is partially soluble with a layer of viscous insoluble material on top of the solution. |
| Yohimbe | 62.5 | Sonicate | 0 |  |
| Kratom | 21 | Sonicate  Vortex | 0 |  |
| Goldenseal | 125 | Sonicate  Do NOT Vortex | 0 | If Goldenseal in DMSO is agitated strongly or vortexed, then a thick layer of foam forms. This layer cannot be reincorporated into the solution until a much higher volume of DMSO is added (approximate concentration 19 mg/mL) |
| Kava | 6 | Vortex Sonicate | 0 |  |
| Milk Thistle | 167 | Vortex Sonicate | 0 |  |
| Ginseng | 11 | Vortex Sonicate | 5 |  |
| Blue Cohosh | 125 | Sonicate | 0 |  |
| Comfrey | 83 | Sonicate | 0 |  |
| Aristolochia fangchi | 83 | Sonicate | 0 |  |
| Green tea | 125 | Sonicate | 0 |  |
| Ashwagandha | 5 | Sonicate  Vortex | 0 |  |
| Usnea lichen | Partially soluble | Sonicate  Centrifuge | NA | At ~83 mg/mL, Usnea lichen is soluble except for a thin layer of what appears to be oil on the top of the liquid. This layer cannot be easily removed. |

\*Vortexing is typically done in 30-second intervals, recommend 2 x 30 seconds as needed. Sonication time should be limited to 10-15 minutes to avoid heating the solution. Centrifugation at 2,000 rpm for 5 minutes where indicated.

\*\*Solution refrigerated overnight, then brought back to room temperature prior to sonication.