**Supplementary figure 1** Flow chart of included patients. Abbreviations: AD; Alzheimer’s disease patients.

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**Supplementary Table 1 –** Effects of treatment and diagnosis on cognitive measures. Results are deemed significant at p<0.05*.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Variable*** |  | ***Baseline***  | ***Follow-up*** | ***Tr*** ***p*** | ***G x Tr*** ***p*** | ***G x Tr***  ***η2***  |
| GDS Total Score | AllpADAD | 8.21±2.367.95±2.478.43±2.27 | 5.74-1.815.13±1.626.24±1.81 | <0.001 | 0.173 | 0.001 |
| NPI Total Score  | AllpADAD | 18.08±6.3313.93±3.8921.47±5.92 | 13.29±4.148.17±3.1113.28±4.14 | <0.001 | 0.005 | 0.12 |
| NPI Depression subscore | AllpADAD | 7.72±2.157.53±1.977.88±2.29 | 4.21±2.113.97±1.983.98±2.22 | <0.001 | 0.877 | 0.003 |
| NPI Anxiety subscore | AllpADAD | 1.20±1.410.65±0.971.65±1.55 | 0.79±0.920.37±0.631.12±0.99 | 0.001 | 0.139 | 0.02 |
| NPI Apathy subscore  | AllpADAD | 4.09±2.941.93±1.945.84±2.41 | 2.69±1.921.40±1.443.75±1.57 | <0.001 | <0.001 | 0.18 |
| NPI Night sleep behavior | AllpADAD | 2.30±2.421.00±1.183.37±2.65 | 1.47±1.620.80±0.992.02±1.82 | <0.001 | <0.001 | 0.16 |

**Abbreviations:** AD, mild-to moderate AD; GDS, geriatric depression scale; NPI, Neuropsychiatric Inventory; pAD, prodromal Alzheimer’s Disease; Tr, treatment (baseline and follow-up differences); G x Tr, interaction between treatment and prodromal vs mild-to-moderate-AD groups

**Supplementary Table 2 –** Predictors of antidepressant response in AD patients; Linear regression model. Results are deemed significant at p<0.05*.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Variable*** | ***Beta***  | ***SE*** | ***t*** | ***p*** |
| Age | 0.07 | 0.02 | 0.85 | 0.40 |
| Sex | -0.14 | 0.37 | 0.05 | 0.07 |
| CIRS | 0.02 | 0.05 | 0.22 | 0.83 |
| Baseline GDS | 0.66 | 0.07 | 8.3 | <0.001 |
| Baseline total NPI | -0.005 | 0.03 | 0.05 | 0.95 |
| Baseline MMSE  | 0.08 | 0.03 | 0.05 | 0.96 |

**Abbreviations:** CIRS, cumulative illness rating scale; GDS, geriatric depression scale; MMSE, Mini Mental State Examination; NPI, Neuropsychiatric Inventory; NS, not significant; SE, standard error.