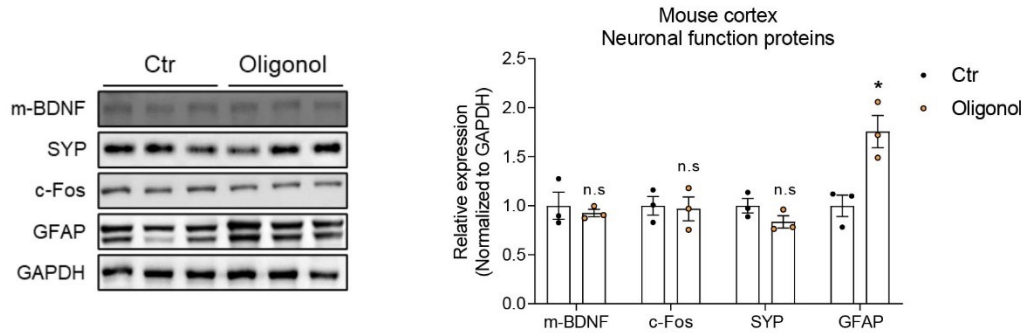


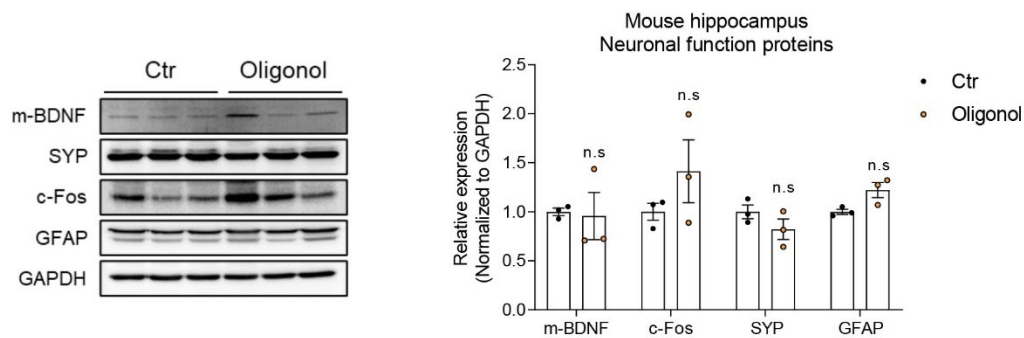
Supplementary Figure 1. Participant (mouse) flow chart

In total, 6 of 5xFAD male mice were included in the experiment. Five-month-old 5xFAD male mice (n=6) were housed in the Laboratory Animal Research Center, Chonnam National University (CNU), under a 16-h light/8-h dark cycle at 23°C with 60 humidity and given ad libitum access to food and water when the experimental procedures were conducted. Each animal was housed in each cage. Body weight and blood glucose levels of all mice were detected once a week. The 5xFAD mice were subdivided into two groups: oligonol treatment (n=3) and placebo (n=3). The oligonol treatment groups were given oral treatment of oligonol at a dose of 50mg/kg/day as a suspension in drinking water daily for 8 weeks. The placebo group were given water in the same way with the oligonol treatment group. At 7th week of the experimental period, animals were tested in the Barnes maze, marble burying test (MBT), and nestlet shredding behavior test (NST). They were sacrificed after the 8 weeks of the experimental period.

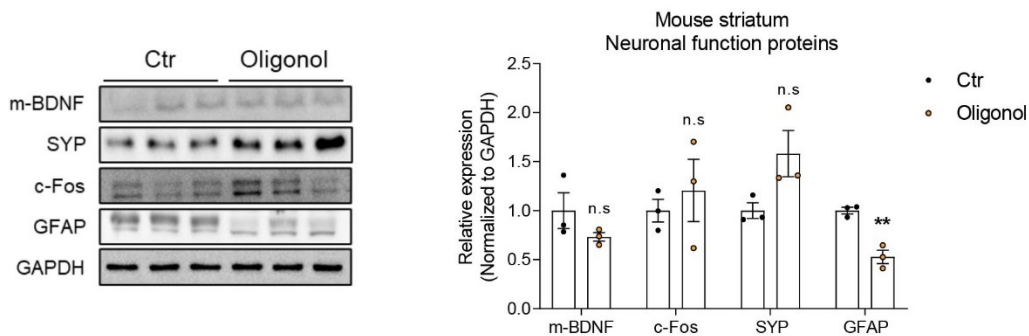
A



B



C



Supplementary Figure 2. Protein level measurement in brain tissue of oligonol treated 5xFAD mice

(A) The expression level of neuronal function related proteins (m-BDNF, Syp, c-FOS and GFAP) in control and oligonol treated mice cortex tissue and described as the mean \pm S.E.M (n=3). (B) The expression level of ROS-generating related proteins (m-BDNF, Syp, c-FOS and

GFAP) in control and oligonol treated mice hippocampus tissue and described as the mean \pm S.E.M (n=3). (C) The expression level of neuronal function related proteins (m-BDNF, Syp, c-FOS and GFAP) in control and oligonol treated mice striatum tissue and depicted as the mean \pm S.E.M (n=3). The statistical of differential expression level was represent using an unpaired two-tailed *t*-test with Welch's correction. ns, not significant, **p* < 0.05, ***p* < 0.01, ****p* < 0.005.