Effects of Novel Drugs on Gene Expression of Alzheimer Disease-Related Genes

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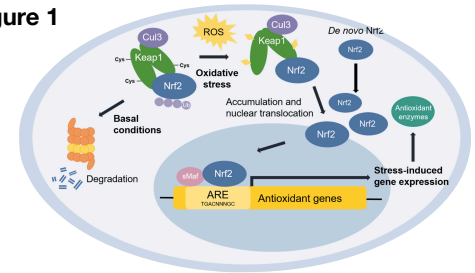
Introduction

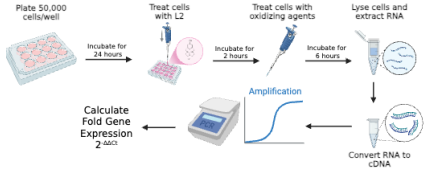
- Alzheimer Disease (AD) is the leading form of dementia
- AD is characterized by amyloid-beta plaque and tau neurofibrillary tangles
- Presence of misfolded proteins generate Reactive Oxygen Species (ROS) and initiate chronic inflammation
- Current research looks at how activating the Nrf2 (anti-oxidation) pathway could prevent the progression of AD (Figure 1)

Figure 1



KEAP1-Nrf2 Pathway (*Ngo et al., 2022*)

Methods: qPCR

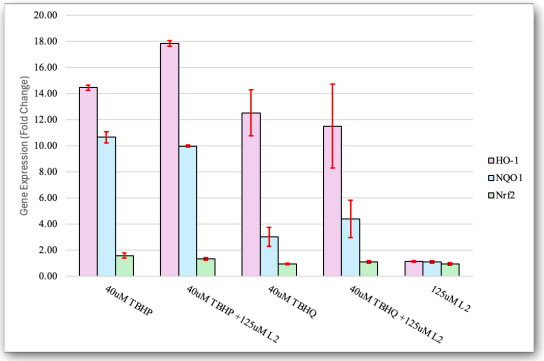


Hypothesis

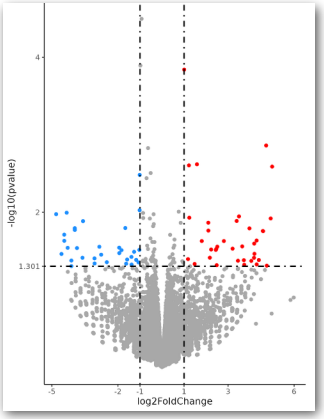
The novel drug reduces oxidative stress by binding to ROS and activate the Nrf2 pathway by interfering with the Keap1/Nrf2 interaction.

Results

I. Effect of L2 on Nrf2-related gene expression in BV2 mouse microglial cells

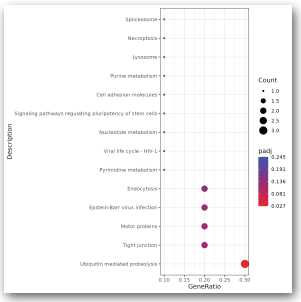


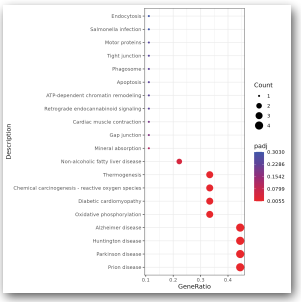
II. Volcano plot on differential expressed genes in L2-treated BV2 and L2+tBHP-treated BV2



Results

III. KEGG Enrichment in L2-treated BV2 and L2+tBHP-treated BV2





Conclusions

- In the presence of tBHP, L2 induces HO-1 and NQO1 gene expression
- L2 alone does not activate Nrf2 gene expression
- L2 alone does not activate the Nrf2 pathway
- Transcriptome analysis shows L2 reduces expression of AD-related genes