ACS Chemical Neuroscience

In This Issue

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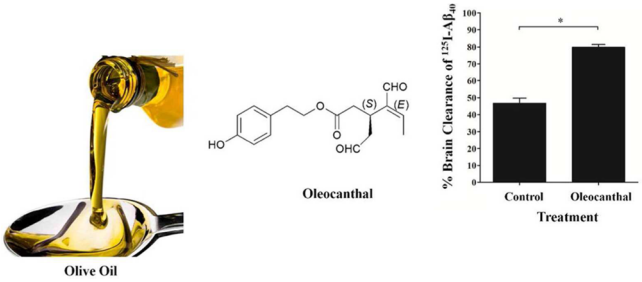
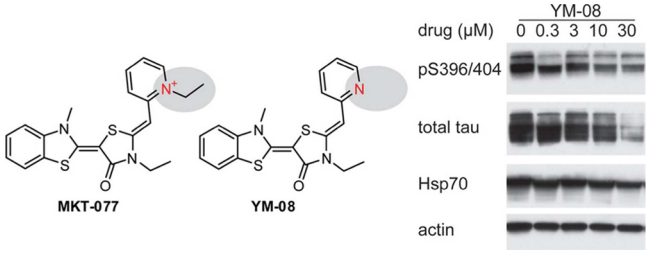
OLIVE OIL PROTECTIVE AGAINST ALZHEIMER'S DISEASE



Studies on the impact of diet indicate that consumption of extra-virgin olive oil is linked to reduced risk of Alzheimer's disease (AD). The protective effect has been attributed to the phenolic component of extra-virgin olive oil, oleocanthal. In the current issue, Abuznait et al. (DOI: 10.1021/cn400024q) report a new mechanism underlying the neuroprotective effects of this compound.

The accumulation of β-amyloid (Aβ) is a well-known hallmark of AD. The authors showed that oleocanthal increased Aβ clearance by upregulating two blood-brain barrier localized transport proteins, LDL lipoprotein receptor related protein-1 and P-glycoprotein. The increase in clearance of Aβ from the brain likely facilitates its degradation.

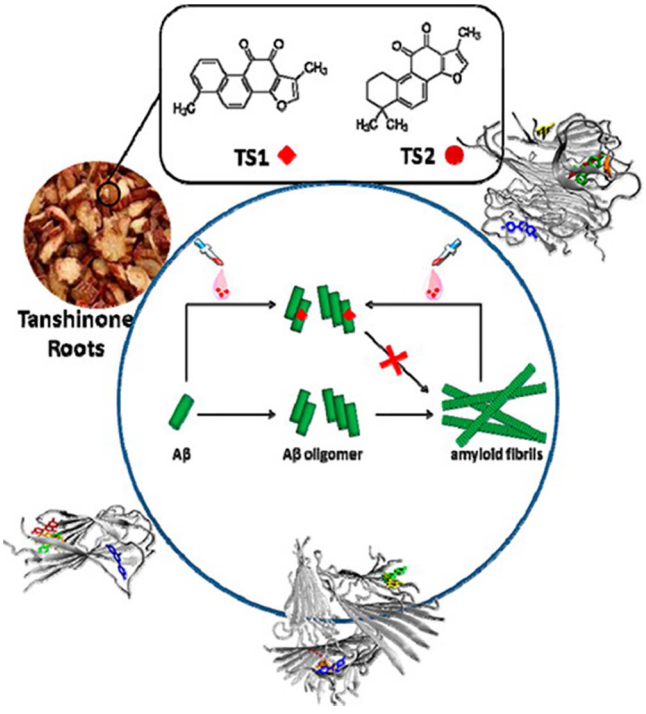
A SUPERIOR COMPOUND FOR TREATING TAUOPATHIES



Tau protein accumulation has been implicated in several neurodegenerative disorders. Previous work has shown that inhibitors of molecular chaperones, such as heat shock protein 70 (Hsp70), can lower this accumulation and improve memory and learning. However, these compounds have not reached the clinic since these small molecules do not penetrate the blood-brain barrier (BBB). In the current issue, Miyata et al. (DOI: 10.1021/cn300210g) provide an Hsp70 inhibitor with BBB penetrating properties that could eventually lead to treatment of tauopathies.

The authors modified the Hsp70 inhibitor compound, MKT-077, to improve its BBB penetrating properties. Replacing a cationic pyridinium moiety with a neutral pyridine resulted in the synthesis of YM-08, the first BBB permeable Hsp70 inhibitor. YM-08 is an exciting new lead compound that could provide a much-needed tool for treating relevant neurodegenerative disorders.

TANSHINONES PREVENT AMYLOID AGGREGATION



The identification of compounds that target Aβ production, aggregation, or clearance is a high priority for treating AD. Now, Wang et al. (DOI: 10.1021/cn400051e) report tanshinones, compounds extracted from the roots of the Chinese herb Danshen, with neuroprotective properties from Aβ cytotoxicity.

The authors investigated the inhibitory activity of Tanshinone I (TS1) and Tanshinone IIA (TS2) on the aggregation and toxicity of full-length Aβ (Aβ1−42) using several different methodologies. Their experimental results showed that both TS1 and TS2 inhibit in vitro Aβ amyloid formation, disaggregate preformed Aβ fibrils, and protect cells from Aβ-induced toxicity, with TS1 displaying higher inhibitory potency than TS2.

Published: June 19, 2013

dx.doi.org/10.1021/cn400113q | *ACS Chem. Neurosci.* 2013, 4, 908−908