Five compounds were investigated for their protective activity against glutamate-induced neurotoxicity in HT22 cells. The relative neuroprotection of compounds is exhibited in Figure 3. Among them, epicatechin (2), nudiposide (3), lyoniside (4), and scopoletin (5) showed significant neuroprotective activities at concentrations ranging from 10, 50, and 100 μM in the dose-dependent manner. Four compounds increased HT22 cell density reduced by glutamate [Figure 4]. Neuroprotective activities of epicatechin, nudiposide, and lyoniside, scopoletin were firstly reported in this manuscript.

Scopoletin (5) (74.10% at 50 μM and 75.70% at 100 μM; $P < 0.05$) showed the most potent activity against glutamate-induced neurotoxicity. The potency of scopoletin is similar with that of trolox, a positive control. It was reported that scopoletin increased rat retinal neuron cells at the high concentration and also showed anti-cholinesterase activity.[30,31]

Therefore, scopoletin may be a good candidate of drug development for treatment of AD.

CONCLUSION

We isolated five compounds from *T. amurensis* and evaluated the neuroprotective effect of five compounds on glutamate-induced oxidative stress in HT22 cells in this study. Epicatechin, nudiposide, lyoniside and scopoletin significantly protected neuronal cells, and these results suggest that epicatechin, nudiposide, lyoniside and scopoletin are correlated with neuroprotective effect of *T. amurensis*.

Further study is required to understand the bio mechanism of neuroprotective effect of four compounds.

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