

Neoechinulin A is an indole alkaloid with several biological activities. We previously reported that this compound protects neuronal PC12 cells from cytotoxicity induced by the peroxynitrite generator 3-morpholinosydnonimine (SIN-1), but the target proteins and precise mechanism of action of neoechinulin A were unclear. Here, we employed a phage display screen to identify proteins that bind directly with neoechinulin A. Our findings identified two proteins, chromogranin B and glutaredoxin 3, as candidate target binding partners for the alkaloid. QCM analyses revealed that neoechinulin A displays high affinity for both chromogranin B and glutaredoxin 3. RNA interference-mediated depletion of chromogranin B decreased the sensitivity of PC12 cells against SIN-1. Our results suggested chromogranin B is a plausible target of neoechinulin A.

This work reports identification of direct association protein of neoechinulin A, a neuroprotective agent.