

# Neurotrophic Small Molecules

Small molecule neurotrophic agents continue to be the focus of drug discovery for neurodegenerative diseases. BDNF itself has limited clinical utility. Small molecules that mimic BDNF's neurotrophic activity or act via alternative mechanisms may offer greater therapeutic potential.<sup>1</sup> Recently several new small molecule neurotrophic agents have been reported and are described below.

## Epothilone B

A blood-brain barrier-permeable microtubule-stabilizing drug. It decreases scarring after rodent spinal cord injury (SCI) improves motor learning after traumatic brain injury in rats by inhibiting polarization and directed migration of fibroblasts. Conversely it reactivates neuronal polarization by inducing microtubule polymerization into the axon tip. Together these effects promote axon regeneration and improved motor function after SCI.<sup>2</sup>

**Product No: 10-2133** 1 mg/ 5 mg/

## Prostratin

A non-tumorigenic 12-deoxyphorbol ester PKC activator. Exerts a proliferative effect on neural progenitor cells *in vitro*. This effect is blocked by PKC inhibitors. Prostratin treatment *in vivo* induces proliferation of neural progenitor cells in the dentate gyrus of the hippocampus and the subventricular zone.<sup>3</sup> Structural analogs of 12-deoxyphorbols display similar activity with varying potency

**Product No: 10-2169** 1 mg/ 5 mg/

## Synaptamide

An endogenous metabolite of DCHA which promotes neurogenesis, neuritogenesis and synaptogenesis. Endogenous agonist at the orphan receptor GPR110 which mediates synaptamide-induced bioactivity in a cAMP-dependent manner at low nM potency.<sup>4</sup>

**Product No: 10-1194** 5 mg/ 25 mg/

## Monastrol

The kinesin-5 inhibitor, monastrol in combination with chondroitinase ABC significantly improved axon regeneration in a spinal cord injury animal model, however without improvements in function.<sup>5</sup>

**Product No: 10-2629** 5 mg/ 25 mg/

## Idebenone

Repeated oral administration of the NGF synthesis stimulator, Idebenone partially restored age-associated decrease in NGF in the frontal and parietal cortices along with behavioral improvement in rodent models.<sup>6</sup>

**Product No: 10-1130** 20 mg/ 100 mg/

## TRO19622 (Olesoxime)

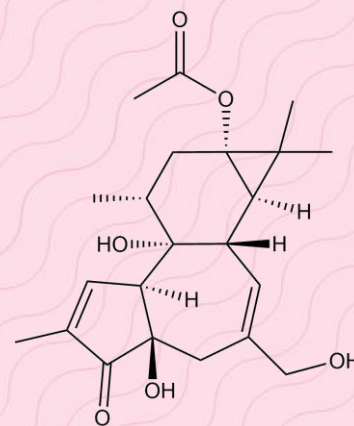
Induces oligodendrocyte maturation in culture and promotes myelin regeneration *in vivo* in a rodent model.<sup>7</sup>

**Product No: 10-3230** 5 mg/ 25 mg/

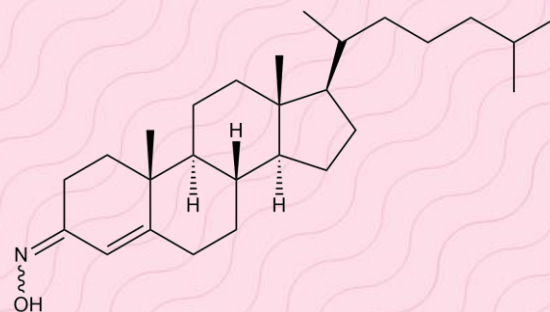
## LM22A-4

A small molecule BDNF mimetic displaying neurotrophic activity.<sup>8</sup>

**Product No: 10-1405** 5 mg/ 25 mg/



Prostratin



TRO19622

## REFERENCES

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