Objective: To evaluate whether a series of pharmacologic agents with potential neuroprotective effects accelerate and/or improve facial nerve function recovery after facial nerve crush injury.

Methods: Eighty-four female Wistar-Hannover rats underwent head restraint implantation and daily conditioning. Animals then underwent unilateral crush injury to the main trunk of the facial nerve, and were randomized to receive treatment with atorvastatin (n=10), sildenafil (n=10), darbepoetin (n=20), or corresponding control agent (n=40). The return of whisking function was tracked throughout the recovery period.

RESULTS: All animals tolerated the procedures well without issue. Four animals (atorvastatin n=2; darbepoetin, n=1; sildenafil, n=1) were excluded due to unrelated mortality. Seventy-six animals completed the study.

CONCLUSIONS: These findings 1) extend to the facial nerve previous work that has shown Epo and sildenafil to be beneficial when administered after central and peripheral nerve injury, and 2) establish the foundation for further research that will enable the translation of findings for the management of patients presenting with facial paralysis after traumatic facial nerve injury.