The aim of this study was to examine the effect of statins on motor neuron viability in culture. All tested statins (fluvastatin, simvastatin and pravastatin) induced loss of motor neurons while having no effect on cortical neurons or Schwann cells. The effect of fluvastatin was concentration-dependent and occurred at concentrations which may occur in statin-treated patients. In the short run, fluvastatin induced neurite degeneration. The results of this study support recent clinical observations about the relationship between statins and ALS. This is the first experimental study in which toxic effect of statins specific for motor neurons was demonstrated.

Minor essential revisions:
(1) simvastatin is used clinically as an inactive prodrug lactone which is converted in vivo to active acid form. It is essential to state in which form (lactone or open acid) simvastatin was used in this study.
(2) Fig. 1C: concentrations of statins should be in micromoles rather than milimoles

Discretionary revisions:
(1) Discussion section seems too short. For example, authors mention the possible role of LXR but this issue should be explained in more detail because in the current for is unclear for a non-specialist.
(2) What mechanism(s) authors propose to explain specific toxicity of statins to motorneurons vs other neurons or glial cells?
(3) It would be interesting to test if and which mevalonate derivatives prevent the toxic effect of statins on motor neurons. Such experiments could explain or at least suggest the mechanism of toxicity.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.