CLAIMS

1) A **method** of preparing a quantity of neoSTX comprising the steps of:

   (a) contacting in solution in a reaction solvent a quantity of purified GTX1,4 and a quantity of dithiol for a period of time and at a temperature sufficient to provide a reaction product in which greater than 97.5% (w/w) of the GTX1,4 has been converted to neoSTX; and then

   (b) applying the reaction product to a silica based weak cation exchange sorbent and eluting with an aqueous weak organic acid to separate the neoSTX from the dithiol and provide the quantity of neoSTX,

   where the pH of the solution is in the range 7.4 to 7.6.

2) The method of claim 1 where the reaction solvent is buffered aqueous acetic acid.

3) The method of claim 1 or 2 where the dithiol is selected from the group consisting of dithiothreitol (DTT) and dithiobutylamine (DTBA).

4) The method of claim 1 where the dithiol is dithiothreitol (DTT).