Summary ~~of the Invention~~

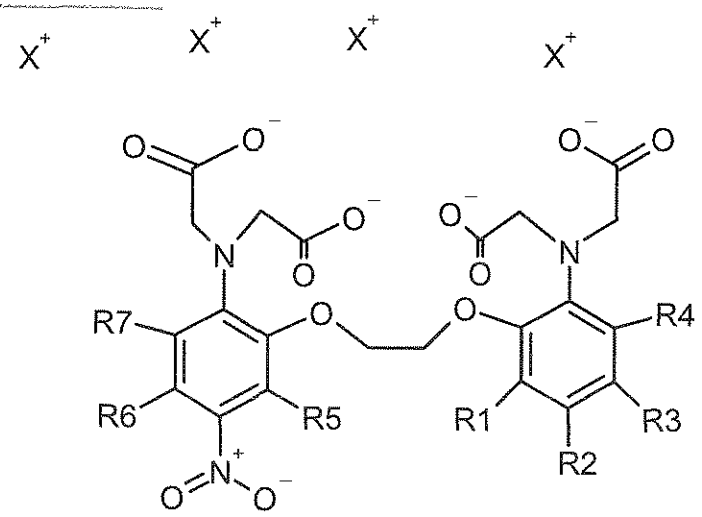
The present ~~invention~~disclosure provides a reagent that is very useful in the measurement of calcium ions and amongst other positive aspects, has excellent storage stability, is free from the problem of environmental pollution by arsenic, does not show interference by magnesium or gadolinium and permits rapid and accurate calcium determination over a broad range of concentrations.

The present ~~invention~~disclosure relates to a method for determining the concentration of calcium ions in a sample, the method comprising the steps of mixing the sample with a solution comprising a mono-nitro-BAPTA-type chelator thereby binding calcium ions to the mono-nitro-BAPTA-type chelator, releasing calcium ions from the mono-nitro-BAPTA-type chelator, wherein said release causes a change in absorbance of the mono-nitro-BAPTA-type chelator, measuring the change in absorbance and using the change in absorbance measured for determining the concentration of calcium ions.

In a first aspect, there is provided a method for determining the concentration of calcium ions in a sample, the method comprising the steps of

a) mixing the sample with a solution comprising a compound of Formula I

Formula I



wherein R1 is selected from hydrogen, halogen, carboxy, alkyl and formyl, R2 is independently selected from hydrogen, halogen, alkyl, alkoxy, morpholino, CN, carboxy and formyl, R3 is independently selected from hydrogen, halogen, N-alkyl sulfate, carboxy, alkoxy, phenyl, CN, CF3, and tertiary butyl, R4 is independently selected from hydrogen, halogen or alkyl, R5 and R7 independently are hydrogen or alkyl R6 is selected from hydrogen, alkyl, alkoxy and halogen, or

wherein R3 and R4 form an aromatic bridge and X+ is a positively charged counter ion,

thereby binding calcium ions to the compound

b) releasing calcium ions from the compound, wherein said release causes a change in absorbance of the compound

c) measuring the change in absorbance

d) using the change in absorbance measured in (c) for determining the concentration of calcium ions.

Also disclosed is a stable reagent composition for measurement of calcium containing a mono-nitro-BAPTA-type chelator and having a pH ranging from pH 8.5 to pH 11.5.

In a second aspect, there is provided a reagent for measurement of calcium, wherein the reagent has a pH ranging from pH 8.5 to pH 11.5, containing a compound of Formula I as defined above.

Further the present ~~invention~~disclosure is directed to a kit comprising a reagent composition for measurement of calcium having a pH ranging from pH 8.5 to pH 11.5 and containing a mono-nitro-BAPTA-type chelator.

In a third aspect, there is provided a test kit for the measurement of calcium, the test kit comprising the reagent as defined above.

Detailed Description of the Invention

In a preferred embodiment the present invention relates to a method for determining the concentration of calcium ions in a sample, the method comprising the steps of mixing the sample with a solution comprising a mono-nitro-BAPTA-type chelator thereby binding calcium ions to the mono-nitro-BAPTA-type chelator, releasing calcium ions from the mono-nitro-BAPTA-type chelator, wherein said release causes a change in absorbance of the mono-nitro-BAPTA-type chelator, measuring the change in absorbance and using the change in absorbance measured for determining the concentration of calcium ions.

A method for determining the concentration of calcium ions in a sample is disclosed, the method comprising the steps of a) mixing the sample with a solution comprising a compound of Formula I