

APPLICATION OF PEROXOMONOSULPFATE AS REAGENT FOR MICRODETERMINATION OF VITAMIN C. POTENTIOMETRIC DETERMINATION OF VITAMIN C IN THE PRESENCE OF SULPHITE

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In view of the widespread use of vitamin C (ascorbic acid) several methods were developed for the determination of ascorbic acid in pharmaceutical preparations. Titrimetric (Visual titration method) and potentiometric using iodine, sodium 2,6-dichlorophenolindophenolate (DCIP) and photometric methods commonly used to assay ascorbic acid. Unfortunately these methods are not applicable to many pharmaceutical preparations containing SO₂ and/or SO₃²⁻ ions.

Although the titrimetric methods are simple to use, difficulties are encountered even with commonly used titrants. Additional problems are met especially with colored samples or in the presence of reducing substances which can bleach the dye and make the analysis nonspecific. Such limitations have encouraged chemists to look for better alternative methods.

On a project on the determination of sulfur compounds it is found that potassium peroxomonosulphate reacts stoichiometrically and quantitatively with ascorbic acid and sulphite-ions but does not react with formaldehyde-bisulphite complex under identical conditions.

A proposed oxidimetric method involves the use of potassium peroxomonosulphate for ascorbic acid mixtures with sulphite-ions. This method requires the masking of SO₃²⁻ ions by formaldehyde-bisulphite complex, which neither reduces the titrant itself nor interferes with the reduction of the titrant by ascorbic acid.



A procedure was developed for determination of ascorbic acid in pharmaceutical preparation for injection 5% (Solutio Acidi ascorbinici 5% pro injectionibus). Determinations of mixtures of vitamin C with sulphites has been successfully carried out by first potentiometric titrating the vitamin C content with potassium peroxomonosulphate direct or in the presence of potassium iodide. Summary of ascorbic acid and sulphite can be potentiometrically titrated with standard potassium peroxomonosulphate solution or in the presence of potassium iodide visually. The results obtained from commercial preparations were compared with those from an official method titration by iodate standard solution in the presence of iodide ions. No difference was found statistically. This method is really the same as titrating ascorbic acid directly with iodine solution. However, this method is more reliable as the potassium peroxomonosulphate solution is more stable than iodine as a primary standard. The method has comparable precision it is even gave less error percent, it is faster and easier to perform and could be used for routine determination.