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Spectrophotometric estimation of Primaquine

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ABSTRACT

The present paper deals with the development of a simple, rapid and sensitive spectrophotometric method for the estimation of primaquine phosphate chemically [8-amino (4-amino-1-methylbutyl) -6-methoxyquinoline phosphate is an antimalarial drug of usual dosage in an equivalent of 15mg ones a day. Primaquine Phosphate by reacting with sodium vanadate to give a pink colour and maximum colour intensity obtained by 0.3 ml perchloric acid. Which has an absorbance maximum at 560 nm.

Key words: Primaquine, Spectrophotometric, Antimalarial.

INTRODUCTION

Malaria is a serious, potentially fatal disease and people traveling to infected areas should take appropriate preventive steps to reduce their risk of contracting it. Prevention relies on a combination of chemoprophylaxis and bite avoidance. Chemoprophylaxis involves taking medication before and during a trip abroad and, in most cases, for four weeks afterwards. People are more likely to comply if they understand the nature of the risk and the drug they are being asked to take. One of the most worrying aspects of malaria is the ability of the causative organism, plasmodium, to develop resistance to combative drugs. Drug resistance develops over time and is not necessarily universal, so a drug may be appropriate in one country but not another, and different drugs may be required in different parts of the same country. It is essential, therefore, to advise tourists and business travelers to take medication that is appropriate for their destination.

The appropriateness of your choice of drug will depend on the type of malaria present at the patient's destination, the possibility of resistance and the person's age and medical history. The

best way to check is to use a database that is updated daily chloroquine / primaquine ($C_{15}H_{21}N_3O$ $2H_3PO_4$).
All antimalarial drugs have side-effects, some of which have been highlighted, often out of context, by the media. Scaremongering can distract from the importance of preventing a potentially fatal disease. All available drugs can cause minor gastric upset, headache and neuropsychiatry symptoms. It is important for health care professionals and tourists to realize that neuropsychiatry symptoms can range from headache, insomnia and dizziness through to serious psychotic episodes. Symptoms at the milder end of the spectrum are most common and can occur as readily with chloroquine and proguanil as with mefloquine. Choosing the most appropriate antimalarial drug is a balancing act between personal medical history, disease resistance and the degree of risk. The present work is deals with the spectrophotometric method for the estimation of primaquine phosphate. Titrimetric method[1,2] is have been reported for assay of primaquine phosphate and its dosage forms.

MATERIAL AND METHODS

(a). Shimadue dubelbeem UV / Vis. Spectrophotometer.

(b). Sodium Venadate solution: 0.1N weigh 12 g of ammonium metavanadate and 11.5 g of sodium carbonate into 200 ml. of water in a 500 ml. beaker and boil the contents till the vapors do not give positive reaction for ammonia, making up the lost water by addition of water. Cool the contents to room temperature, filter using what man No.42 filter paper into a liter volumetric flask and make up to the mark with water[3].

(c). Perchloric acid: 0.1 N mix 0.85 ml of perchloric acid with sufficient 100 volumetric flask.
Preparation of standard primaquine phosphate: Weigh accurately 100 mg primaquine phosphate in to 100 ml . calibrated flask, dissolve and dilute to volume with water. Dilute 10 ml. aliquot to 100 ml. with water(concentration 100 mcg/ml.)
Sample : sample solution is prepared in a similar way as that of standard.
Tablet : weight and powder 20 tablets, transfer and amount of the powder equivalent to 100 mg. primaquine phosphate into a beaker and stir with water till all the primaquine phosphate goes into solution. Filter using What man No.42 in to 100 ml calibrated flask and dilute to volume with water. Dilute 10 ml. aliquot to 100 ml with water.

Procedure:
Transfer 0.3 ml. of perchloric acid , 0.5 ml. of sodium vanadate to a series of 10 ml. calibrated flasks. Pipette out 2 ml. aliquot of standard and sample solution in duplicate to 10 ml. calibrated flasks. Now shake the flasks well and make up to the volume with water. Measure the absorbance of standard and sample solution in 1 cm cells at 550 nm against reagent blank substuring 2 ml. of water instead of primaquine phosphate solution.

Repeated experiments were done to work to work out the optimum parameters viz., the quantity of vanadate, reaction time and acid concentration. It is observed that 0.5 ml of vanadate and 0.2 - 0.4 ml. of perchloric acid are optimum quantities for optimum quantities for obtaining maximum colour intensity. The pink colour has a stability of ten minutes. Usual tablet excipients like talc, starch, magnesium stearate and lactose do not interfere. The recovery experiments were

preformed by adding known amount of primaquine phosphate to placebo prepared from excipients and the results ranged between 99.0 102.0% and for precision the value ranged between 99.0 to 99.5% . In the Table shown comparative assay values for a few commercial samples obtained by the USP method foe primaquine phosphate tablets.

Table: Comparative data on the determination of primaquine phosphate by the proposed method and existed method

Sample	Code.No	% of Purity		
		Existed Method	Proposed Method	Co.Efficient Variation
Drug	X	99.8	100.3	0.49
	Y	99.6	100.2	0.51
Tablets	A	101.2	102.3	0.71
	B	103.5	104.7	1.01
	C	101.6	102.3	0.76
	D	101.3	102.3	0.78
	E	100.5	99.9	0.78

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