

**Short Communication****SIMPLE UV SPECTROPHOTOMETRIC ASSAY OF NEW FORMULATION GENTAMYCIN****Safila Naveed<sup>1,2</sup>, Shabana Naz Shah<sup>2</sup>, Fatima Qamar<sup>1</sup>, Nimra Waheed<sup>1</sup>, and Safeena Nazeer<sup>1</sup>**

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**ABSTRACT:**

Gentamycin belongs to Aminoglycoside class of antibiotics. A simple efficient least time consuming spectrophotometric technique for the assay of Gentamycin has been developed. The assay is based on the ultraviolet UV absorbance maxima at about 202 wavelength of Gentamycin using water as solvent. A sample of drug was dissolved in water to produce a solution containing Gentamycin. Similarly, various dilutions were made. The absorbance of sample preparation was measured at 202nm against the solvent blank and the assay was determined. In our study a simple and quick assay method using U.V spectrophotometer have been developed. The assay is based on measuring the absorbance of new formulation of Gentamycin dilutions at the wavelength of 202 nm. Four different dilutions of 200ppm, 100ppm, 50ppm and 25ppm is prepared. Their percent assay is calculated and regression equation and regression line is obtained to predict further availability of drug.

**Keywords:** assay, Gentamycin, UV spectrophotometry.

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**INTRODUCTION**

Gentamicin belongs to aminoglycoside antibiotic. It is used for the treatment of serious infections caused by gram-negative aerobic bacteria. It is not a single compound but infact a mixture of a number of minor components and three major components, gentamicin C<sub>1</sub>, C<sub>1a</sub>, and C<sub>2</sub>. [1] It is a hydrophilic in nature and is distributed to body water. Moreover it is excreted as the same drug by the kidneys, by glomerular filtration. In old age drug interactions due to increasing prevalence of polypharmacy, decreasing renal efficiency and reduced lean body weight are the major factors that may affect the pharmacokinetics of gentamicin. These factors are probably more prevalent in frail older people.[2]Gentamicin, like all aminoglycoside antibiotics is ototoxic and nephrotoxic. [3] It is commonly used in neonates with hypoxic ischemic encephalopathy (HIE) for the empiric treatment of presumed infection.[4]

In our present study a new formulation of Gentamycin was developed the aim of study was to calculate the percent assay of this new formulation of Gentamycin. A efficient least time consuming and simple spectrophotometric method for the assay of Gentamycin has been developed.

**EXPERIMENTAL**

UV visible 1601 Shimadzu double beam spectrophotometer was used to measurement of spectra. The solvent which are used for the assay was water.

**Wavelength Selection**

About 200 ppm of Gentamycin solution was accurately prepared in water . This solutions were scanned in the 200-400 nm UV region. The wavelength maxima ( $\lambda_{max}$ ) was observed at 202 nm and this wavelength was adopted for absorbance measurement.

### Standard Stock solution

Accurately weighed 20 mg of Gentamycin standard was transferred to a volumetric flask and add sufficient water to produce 100 ml.

### Sample Preparation

20 capsules of new formulation of Gentamycin were weighed and emptied. By calculating the average weighed sample powder equivalent to 20 mg of Gentamycin was transferred into a volumetric flask containing 10mL water. The solutions were sonicated for about 5 min and than make up volume upto 100 ml with water.

### Dilutions preparation

Three dilutions of 100 ppm, 50 ppm and 25 ppm were made from 200ppm sample Gentamycin solution.

### Procedure

After preparation of standard and sample solutions, strength of solution 200 ppm in 100 ml absorbance of the sample preparation and standard preparation in 1cm cell at the wavelength of maximum absorbance at about 202nm, using a spectrophotometer, using the blank solution. Calculate the quantity in mg, of Gentamycin per capsule.

## RESULT

Pharmaceutical assay was carried out by using spectrophotometer on new formulation of Gentamycin capsules during the study. Table-1 shows different concentration and absorbance of new formulation dilutions.

**Table 1. Concentration and absorbance of new formulation Gentamycin**

concentration	absorbance
200ppm	0.199
	0.198
	0.199
100ppm	0.103
	0.103
	0.103
50ppm	0.053
	0.053
	0.053
25ppm	0.043
	0.043
	0.043

**Table 2. Regression equations of Gentamycin**

Drug	Regression equation	R <sup>2</sup>
Gentamycin	$Y=0.0009x+0.013$	0.9939

Four different dilutions of Gentamycin new formulation were prepared (200ppm, 100ppm, 50ppm and 25ppm). Their percent assay is calculated and regression equation and regression line is obtained to predict further availability of drug.

For detect linearity solutions of 200ppm, 100ppm, 50ppm and 25ppm is prepared and three absorbances in triplicate were taken at each level in spectrophotometric analysis. For linearity plot concentration vs. absorbance at level 200ppm, 100ppm, 50ppm and 25ppm is shown in Fig. 2. Two and three squared

correlation coefficient was found to be 0.9939 for new formulation of Gentamycin. It should not be less than 0.99. Squared correlation coefficient value is well within the limit.

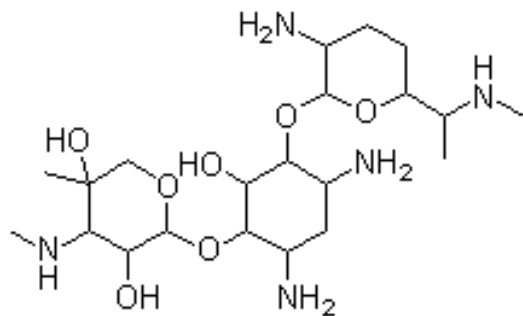


Fig-1. Structure Of Gentamycin

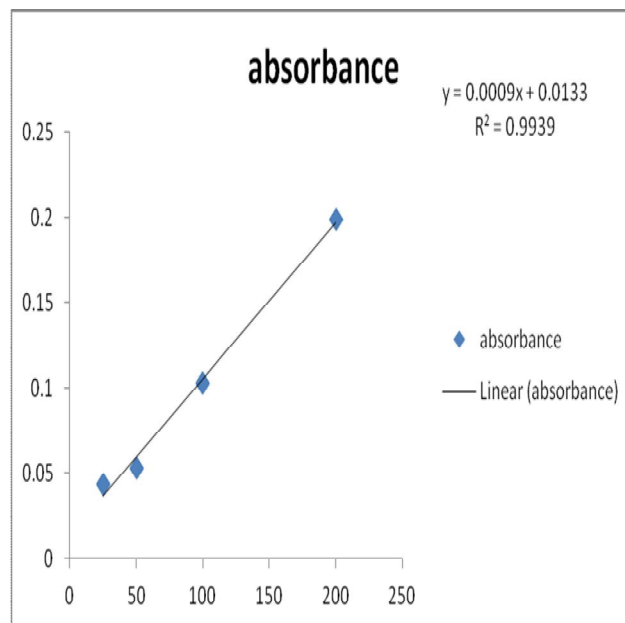


Fig-2 Linearity plot for assay of different dilutions of Gentamycin

## CONCLUSION

A good linear relationship was observed for different concentrations ranges of 200ppm, 100ppm, 50ppm and 25ppm. The correlation coefficient for new formulation of Gentamycin was found to be 0.9939. Squared correlation coefficient value is well within the limit.

## REFERENCES

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