RAPID DETERMINATION OF VALSARTAN IN PHARMACEUTICAL DOSAGE FORMS BY HPLC

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INTRODUCTION

Valsartan is a drug that lowers blood pressure and is as effective as enalapril, lisinopril and amlodipine in the treatment of mild to moderate hypertension. Valsartan is available as tablets for oral administration, containing 40 mg, 80 mg, 160 mg or 320 mg of valsartan.
Literature survey revealed that valsartan is not yet official in any of the pharmacopoeia. There are various analytical methods with UV, HPLC, LC-MS and other analytical techniques for determination of valsartan. In recent years many methods have been developed for the determination of valsartan in pharmaceutical dosage forms based on HPLC.
The focus of present study was to develop and validate a rapid and economical HPLC method for the determination of valsartan in tablet dosage form.

APPARATUS

The analysis was carried on VARIAN HPLC system consisted of: tertiary pump 9012 and 9050 UV/VIS detector. Column MERCK Lichrospher 100 RP Selekt B (250 mm x 4,0 and particle size 5 μm) was used for separation.
Solubility of the tablets is determined by the solubility apparatus ERVEKA DT 700 /1000 LH ZT 302 UV/VIS – spectrophotometer Cary 100 Scan Varian is used to determine the optimal wavelength.

To determine the optimal medium for the solubility of valsartan are used three different media: phosphate buffer 6.8, acetate buffer 4.5 and 0,1 M HCl.
The amount of each medium was 1000 mL, the temperature of fluid 37± 0,5ºC, the number of rotation 50 rpm, and the time of sampling 15, 30 and 45 min.

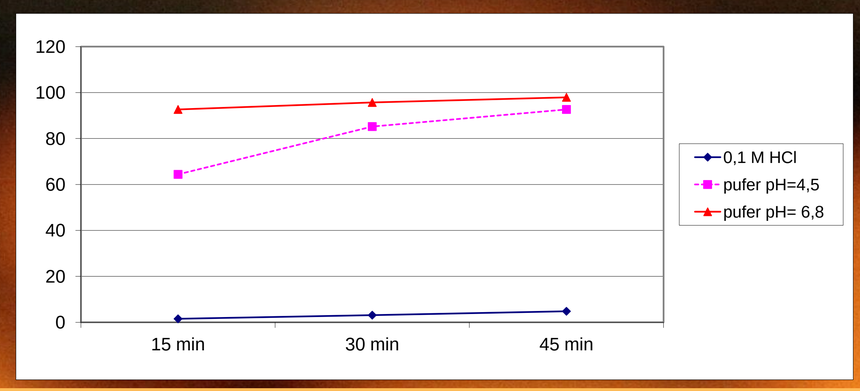
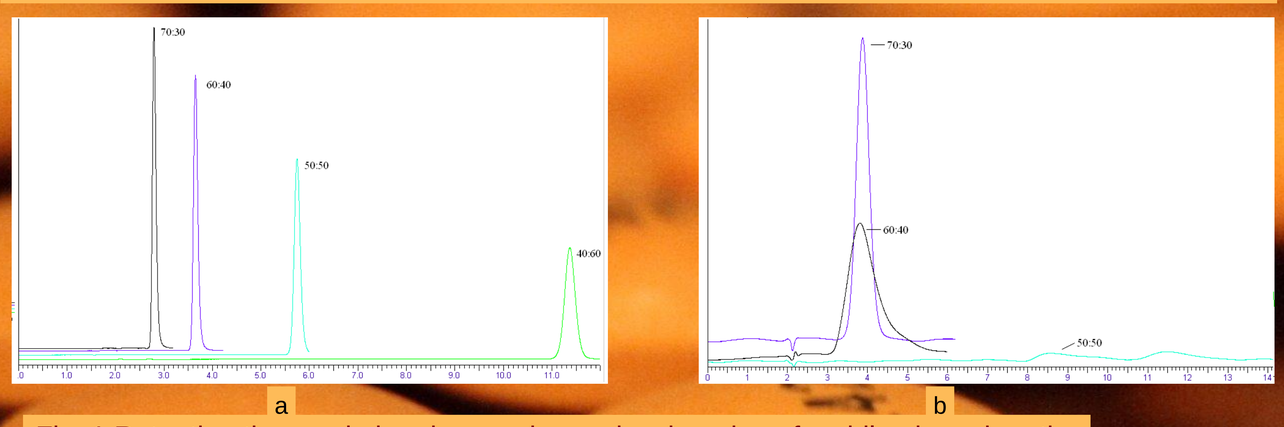


Fig. 3 Solubility of valsartan in a different medium for different times

RESULTS AND DISCUSSION

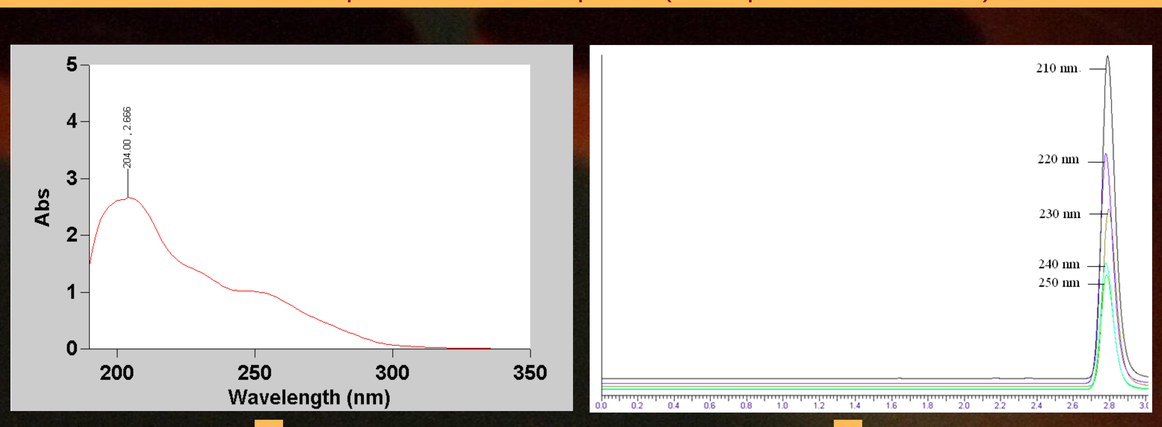
To determine the optimum mobile phase, it is determined the absorbance of standard solution with different mobile phases. Solution of 10 mM $NH_4H_2PO_4$ combined with ACN and methanol. Fig. 1a provides measurement results with mobile phase ACN:puffer in ratio 70:30, 60:40, 50:50 and 40:60, and in Fig. 1b results of measuring the mobile phase methanol: puffer in ratio 70:30, 60:40, and 50:50.



a b

Fig. 1 Retention time and absorbance change by changing of mobile phase in ratio: a)ACN:buffer; b) methanol:buffer

To determine the optimal wavelength was recorded UV spectrum of valsartan in the area of 190-350 nm, and then in the highest apsorbances of 210-250 nm it is measured HPLC valsartan standard under the prescribed mobile phase (ACN: puffer in ratio70:30).



a b

Fig. 2 Absorbance change by changing of wavelength: a)190-350 nm with UV; b) 210-250 nm with HPLC

VALIDATION OF THE METHOD

According to ICH regulations, validation of analytical method for determining the parameter content includes the following parameters: specificity, linearity, accuracy, precision and range of the method. Besides these parameters we chose LOD and LQD.

Table 1. Accuracy of the Method

Added (μg/mL)	Found (μg/mL)	Recovery (%)	Mean recovery (%)	RSD (%)
128	129,21	100,95	99,37	1,49
128	125,45	98,01		
128	126,92	99,16		
160	158,98	99,36	99,08	0,71
160	159,36	99,60		
160	157,25	98,28		
192	193,33	100,69	100,53	1,23
192	195,21	101,67		
192	190,49	99,21		

CONCLUSION

It is proposed new method for the determination of valsartan in pharmaceutical dosage forms. Experimentally are determined the optimal chromatographic conditions, the optimal medium and optimal time for sampling. The proposed method is validated according to ICH regulations. The following parameters are determined: specificity, linearity, range, limit of detection, limit of quantification, precision and accuracy. In its method range there is great linearity with correlation coefficient R=0,999, limit of detection LOD=1,7 μg/mL and limit of quantification LQD=5,1 μg/mL. The method is characterized by high accuracy which is determined by three standard additions to the placebo. Repeatability and intermediate precision are determined. The% RSD values for ripitability, intraday and interday precision were <1%. The retention time is 2,7 min and the method is very simple and quick.