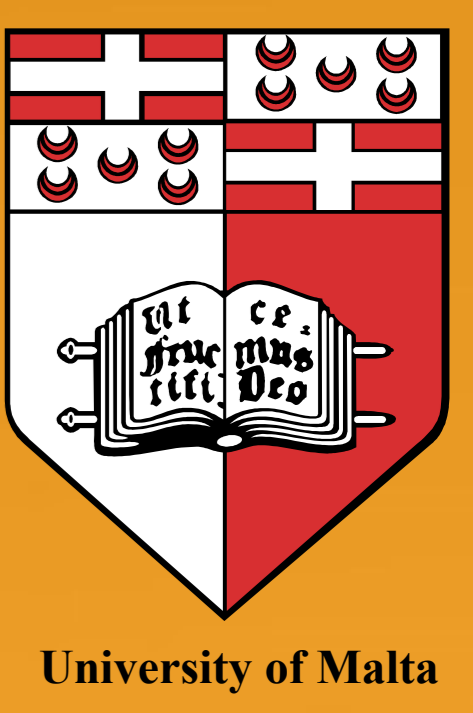


# SAMPLE PREPARATION FOR THE ANALYSIS OF CLINDAMYCIN IN TISSUE



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## INTRODUCTION

The analysis of drugs in tissue is important when it comes to the understanding of pharmacokinetic and pharmacodynamic properties despite the fact that challenges related to efficient extraction and appropriate sample preparation may be encountered [1].

## AIM

The aim of this study is to select the most appropriate tissue spiking and homogenisation technique for the extraction of clindamycin from tissue in terms of recovery and reproducibility.

## METHOD

The sample preparation technique involves the use of mechanical homogenisation of tissue using a dounce homogeniser.

Clindamycin and phenobarbitone standards were purchased from Sigma Aldrich (Germany); sodium chloride, sodium hydroxide, disodium hydrogen phosphate and hydrochloric acid from Scharlau (Spain) and orthophosphoric acid from Fisher Scientific (UK).

Two methods for spiking 500mg of pork tissue with clindamycin were adopted 1) by direct injection of a solution of clindamycin into the tissue followed by homogenisation of the tissue in a solution of deionised water 2) by addition of the drug in solution to 5ml of the homogenised tissue in water. Following selection of the most appropriate spiking technique, different volumes of water in which to homogenise the tissue

in were then tried. Five hundred milligrams of tissue was first homogenised in 5ml of water followed by 4ml and 3ml of water respectively. Other liquids to homogenise the tissue in, apart from water were then tried namely 0.9% sodium chloride solution, 1M NaOH, 0.1M NaOH, 0.2M HCl and pH 7.6 buffer.

Recovery results of the spiking and homogenisation techniques were evaluated by comparing the values for the ratios of the areas under the peak for clindamycin and the internal standard phenobarbitone. Reproducibility results were evaluated by calculating the relative standard deviation of these ratios. Chromatographic conditions were set according to a previously validated HPLC method for the analysis of clindamycin in plasma [2].

## RESULTS

The highest recovery and reproducibility results were attained when homogenising 500mg of tissue, which was spiked by direct injection in 5ml of pH7 buffer.

	Using 5ml of liquid	Using 4ml of liquid	Using 3 ml of liquid
Average value for the areas under the peak-clindamycin: phenobarbitone (N= 4)	0.50	0.37	0.29
Percentage relative standard deviation values between replicates (N=4)	4.21	10.13	16.16

Table 1: Results for areas under the peak and relative standard deviation for tissue homogenisation using different volumes of liquid

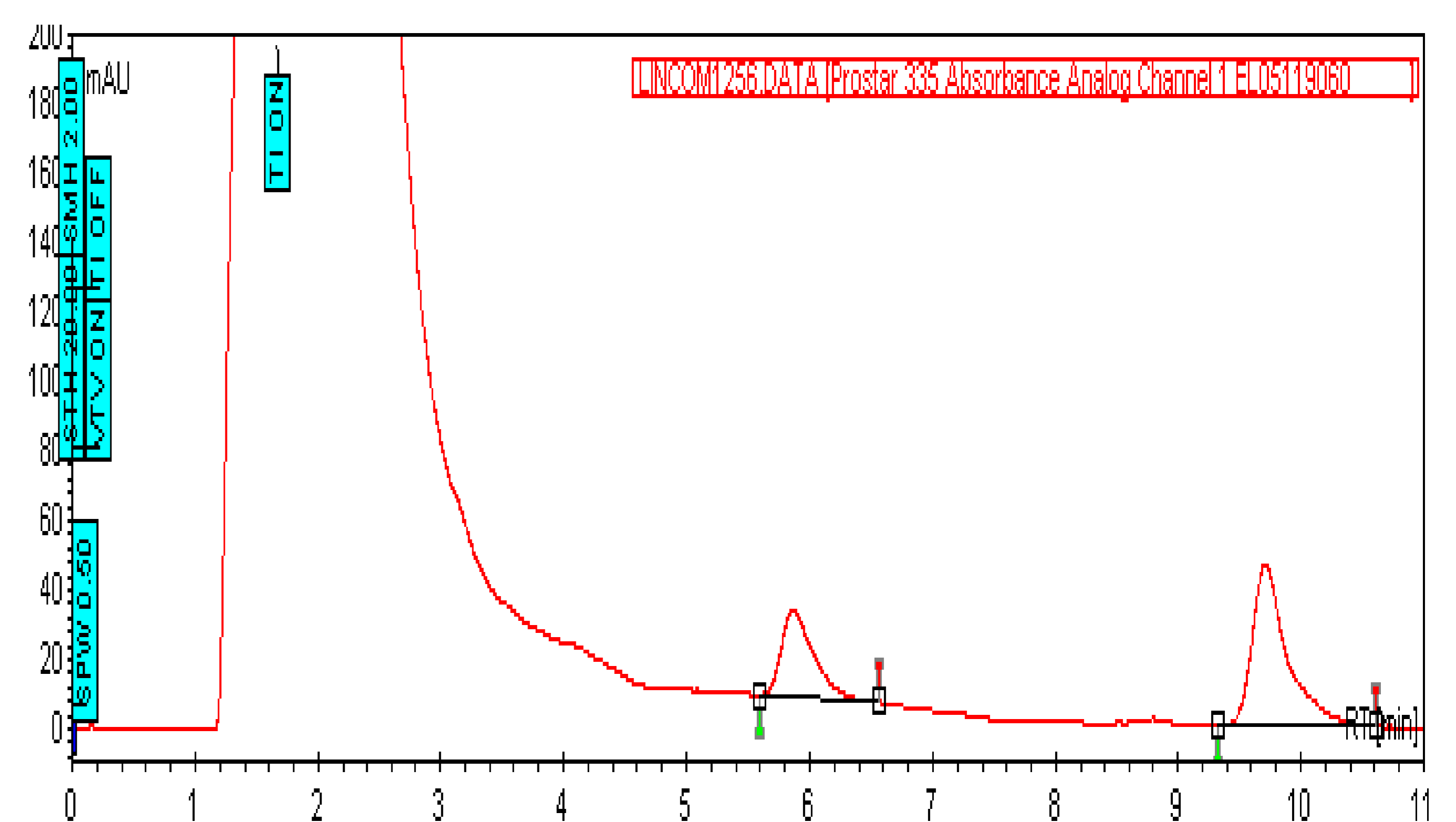


Figure 1 : Chromatogram of Clindamycin (retention time– 5.9 mins) and phenobarbitone (retention time– 9.7 mins) following homogenisation of 500mg of tissue in 5ml sodium chloride solution

## CONCLUSION

The sample preparation procedure developed offers an efficient and simple way to extract and quantify clindamycin in tissue. This can find numerous clinical uses especially since there is not much published information on techniques used for the determination of this drug in tissue.

## REFERENCES:

[1].YJ Xue, H Gao, QC Ji, Z Lam, X Fang, ZJ Lin et al. 'Bioanalysis of drug in tissue: current status and challenges.' *Bioanalysis*, 4(2012) 2637-2653

[2]. M Mifsud, J Vella, V Ferrito, A Serracino– Inglott, LM Azzopardi, N Sammut Bartolo et al. 'A Simple HPLC– UV method for the determination of clindamycin in human plasma.' *J Pharm Chem Res.*, 6 (2014) 696-704