

## A New Method for the Isolation and Quantitation of Lupeol from Natural Resources

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### ABSTRACT

*Ficus bengalensis* is a very common plant found throughout India. The leaves of *Ficus bengalensis* was soxhelatated with n butanol. The extract was concentrated and diethyl ether was added. The resulting white precipitate which settled at bottom was decanted. It was purified by column chromatography. Thin Layer Chromatography (TLC) of the precipitate was done using the solvent system Petether: Diethyl ether: Acetic acid (70:30:2). It was detected using Vanillin Sulphuric acid as the reagent<sup>2</sup>. Here we have developed a cheap, easy and precise method for the isolation and quantitation of lupeol from a common plant, *Ficus bengalensis*. It was found to contain 0.8% w/w of lupeol using high performance liquid chromatography (HPLC).

**Keywords:** HPLC, Lupeol, *Ficus bengalensis*, TLC.

### INTRODUCTION

Lupeol is an important lupene type of triterpene constituent present in plants. It has got wide range of therapeutic uses like antioxidant, chemoprotective, anti-inflammatory, cardioprotective, anti-bacterial and anti-urolithiasis property. Lupeol is a common ingredient in several nutraceuticals and nutricosmetics preparations available in the market. Due to the ability of lupeol to maintain skin texture and integrity by promoting epidermal regeneration and replenishing cutaneous antioxidant enzymes it is used in anti-aging creams, lotions, gels and lip balm<sup>1</sup>. The plant based drugs has got a resurgence of interest nowadays due to their multifaceted use in modern drugs or cosmetics or formulations. Newer lead molecules and chemical entities, natural products serve as a rich source in the field of drug design.

### MATERIALS AND METHODS

The leaves of *Ficus bengalensis* was collected from Payangadi and authenticated by Satheesh M, Professor and Head, Department of Botany, Payannur College, Kannur. A voucher specimen (PGSY/CCOPS/770/10) was

deposited at the herbarium of Pharmacognosy lab, Crescent College of Pharmaceutical Sciences, Kannur, Kerala. The shade dried leaves of *Ficus bengalensis* (20g) was ground to coarse powder form and soxhelatated with n butanol. The extract was concentrated and to it diethyl ether was added. A white precipitate which settled at bottom was decanted. It was purified by column chromatography. TLC of the precipitate was done using the solvent system Petether: Diethyl ether: Acetic acid (70:30:2). It was detected using Vanillin Sulphuric acid as the reagent<sup>2</sup>.

The quantitation of lupeol was done by HPLC reverse phase C18 stainless steel column using isopropyl alcohol and water (80:20) as mobile phase and detected by UV at wave length of 210 nm. The content of lupeol was calculated using the formula:

**Content of lupeol = Sample area x Standard weight x Purity/Standard area x Sample weight.**

### RESULTS AND DISCUSSION

The percentage yield of the extract obtained was 3.5g. The preliminary

phytochemical screening of the extract showed the presence of steroids and saponins. A pink to violet spot was observed for TLC and compared with standard lupeol. The R<sub>f</sub> value obtained was 0.68. The HPLC quantitation showed 0.8%w/w of lupeol.

### CONCLUSION

The method described is a novel and cheap method for the isolation and quantitation of lupeol. The data also

indicated that this method can be used industrially for quality assurance of lupeol in formulations, extracts and cosmetics.

### ACKNOWLEDGEMENT

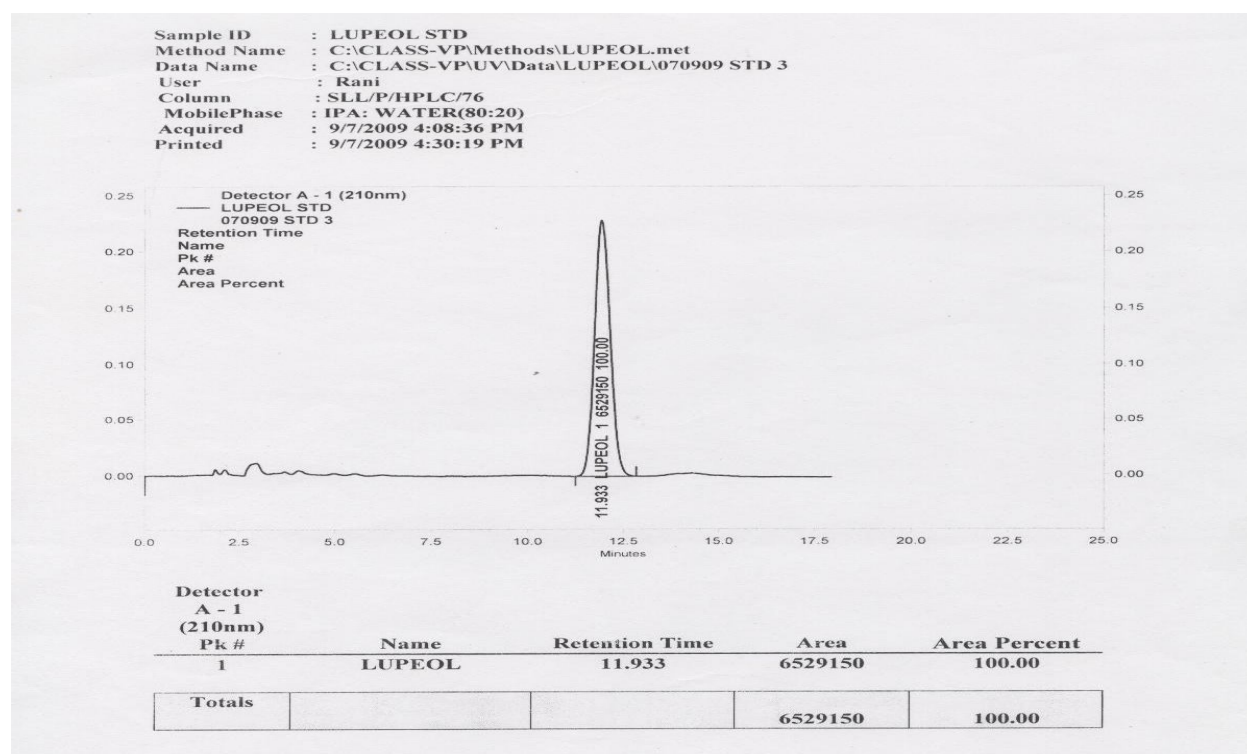
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**Table 1: Yield of Lupeol from leaves of *Ficus bengalensis***

Amount of <i>F. bengalensis</i> leaves taken (g)	Weight of <i>Ficus bengalensis</i> leaf n-butanol extract (g)	Amount of Lupeol obtained (mg) n=3	% Yield (g)
20.0	0.7	12.05±0.05	3.5

**Table 2: Percentage recovery of Lupeol from HPLC**

Initial amount of lupeol injected (mcg/μl)	Observed reading	% Recovery
20 μl (20.6μg)	16.78 μg	81.5



**Fig. 1: HPLC graph of Standard Lupeol**

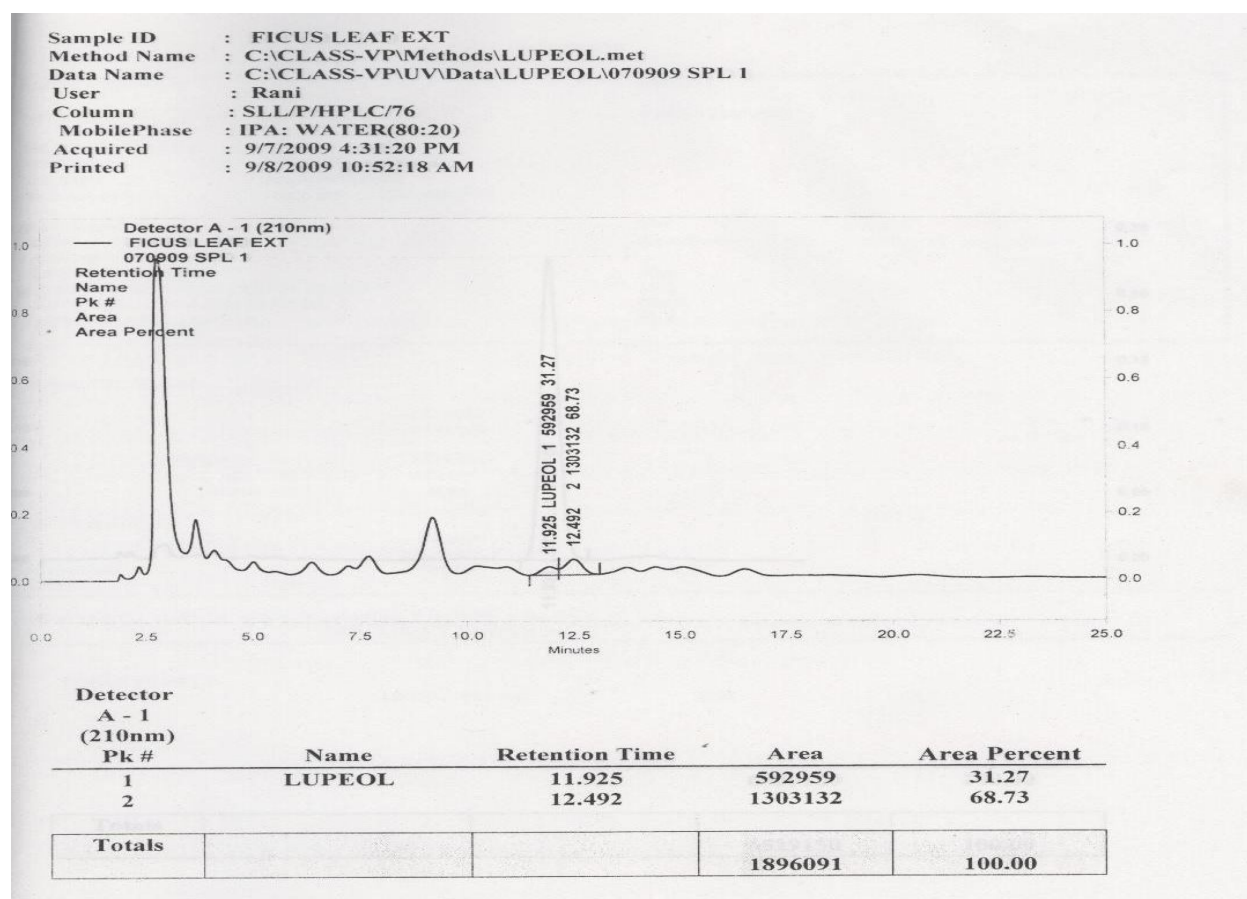


Fig. 2: HPLC quantification of Lupeol from Ficus bengalensis leaf extract

## REFERENCES

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