

**HPLC DETERMINATION OF *LAWSONE* IN ALKALINE EXTRACTS OF
HENNA LEAVES (*LAWSONIA INERMIS*)**

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ABSTRACT

HPLC DETERMINATION OF *LAWSONE* IN ALKALINE EXTRACTS OF HENNA LEAVES (*LAWSONIA INERMIS*)

Due to the needs for more colouring component of natural resources component in keeping up the environment friendly, an interest was stimulated to extract of *lawsone* (2-hydroxy-1, 4-naphthaquinone) in alkaline medium. This study was conducted using different alkaline solvents with different values of pH which were 1.0 M NaOH, 1.0 M NaOH 0.1 M Na₂CO₃, 1.0 M Na₂CO₃ as well as deionised water as a blank. The presence of *lawsone* was identified using High Performance Liquid Chromatography (HPLC) coupled with diode array detector (DAD). The most suitable chromatographic conditions were mobile phase of water to acetonitrile with the ratio of 60:40 (% v/v), flow rate of 1.2 mL/min, 30°C as the column temperature and detection at $\lambda_{\text{max}} = 260$ nm. It was found that the actual amount of *lawsone* in the samples fall in the range of 3500 to 5500 ppm and samples of henna in 1.0 M Na₂CO₃ yields the largest amount of *lawsone* (5359.96 ppm) among the other sample extracts. Thus, 1.0 M Na₂CO₃ is the most suitable alkaline solvent that can be used in extracting large concentration of *lawsone* without being harmful to the environment.

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Henna or scientifically known as *Lawsonia inermis* is a large shrub or small tree that has been around for over 5000 years which is indigenous to the area between Iran and northern India. The plant (Figure 1.1) has been introduced widely throughout the tropics and sub-tropics to enhance the beauty, as a dye and as a commercial crop. Extraction of the dried leaves provides a red-orange dye, *lawsone*, and the highest dye concentration is in the petiole (the central vein). Compared to the older leaves, younger leaves have the higher petiole dye content. It is recommended to take the leaves after three years of planting (Jones, 2009).



Figure 1.1 Henna plant