

THE ESTIMATION OF SOME ALKALOIDS IN THE CAPSULE
AND STEM LATEX OF Papaver somniferum L.

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ABSTRACT

The contents of morphine and its N-oxides, codeine and thebaine in the capsule and stem latex of Papaver somniferum L. are being estimated by using N-methyl- ^{14}C -morphine HCl as a tracer. The results show that the stem latex, as well, contains considerable amounts of alkaloids and that the stems may well play an important role in alkaloid production, in the country.

ÖZET

Bu çalışmada Papaver somniferum L. bitkisinin kapsül ve gövdelerinden toplanan lateks örneklerinde morfin ve morfin N-oksitleri ile kodein ve tebain gibi alkaloidlerin yüzde verimlerini tayin etmeye çalıştık. Çalışmada izleyici olarak N-metil ^{14}C morfin HCl kullanılmıştır. Sonuçlar gövde lateksinin de alkaloid bakımından zengin olduğunu ve ülkedeki alkaloid üretiminde gövde lateksinin de önemli bir rol oynayacağını göstermiştir.

INTRODUCTION

Opium alkaloids are known to be important in therapy. That is why the poppy plant is being grown for centuries in Anatolia. Today Papaver somniferum L. is one of the most important medicinal plants which is being widely cultivated in Turkey. The poppy capsules are being used for obtaining alkaloids in the country nowadays. That is why we wanted to estimate the amounts of some alkaloids (morphine, codeine, thebaine) and morphine N-oxides, which are proved to be natural products /1-5/ both in the capsule and stem latex of the plant, thus comparing the amounts in capsule and stem latex. The comparison of the amounts in the dried

capsules and stems and wet capsules and stems will be subject to further work.

EXPERIMENTAL

Papaver somniferum L. ssp. anatolicum is used in this work and the species were collected from Isparta, Eğridir, Göndürlü village region during 17-27 June 1981.

Eleven samples are collected for each latex, the sixth, (W0+12) being the lancing day, which is accepted to be the day of opium collection by the producers.

W0 = day on which petals are fully opened.

W0 + 7 = day on which first samples are collected.

W0 + 12 = lancing day.

Approximately 1 gr latex is collected from each capsule and stem. Then each latex sample is fed with 1 ml. prepared /6/ N-methyl- ^{14}C - morphine HCl solution and this mixture is extracted as indicated in Fig.1.

Thin-layer chromatography is used for the estimation of the alkaloid contents. For this reason, 1 ml. from each organic layer (Fig. 1.) is applied to 20 x 20 cm. glass plates covered with Silica Gel GF₂₅₄ and activated at 100° for 45 minutes. These plates are then developed in the following solvent system:

Carbon tetrachloride: n-butanol: methanol: Conc.NH₄OH
(40 : 30 : 30 : 3) / 7 /.

The alkaloid bands are scraped off from the developed plates separately, diluted with methanol, which is made up to known volume and the counts are taken. The liquid scintillation counter is used for radioactive counts. Percentage calculations are made according to the radioisotope dilution technique /8/. The results are indicated in Fig.2 and 3.

RESULTS AND DISCUSSION

When the results of both the capsule and stem latex are to be compared, it is easy to see that the stem latex as well contains considerable amounts of alkaloids. Therefore, the stem latex can well play an active role in alkaloid production in Turkey.

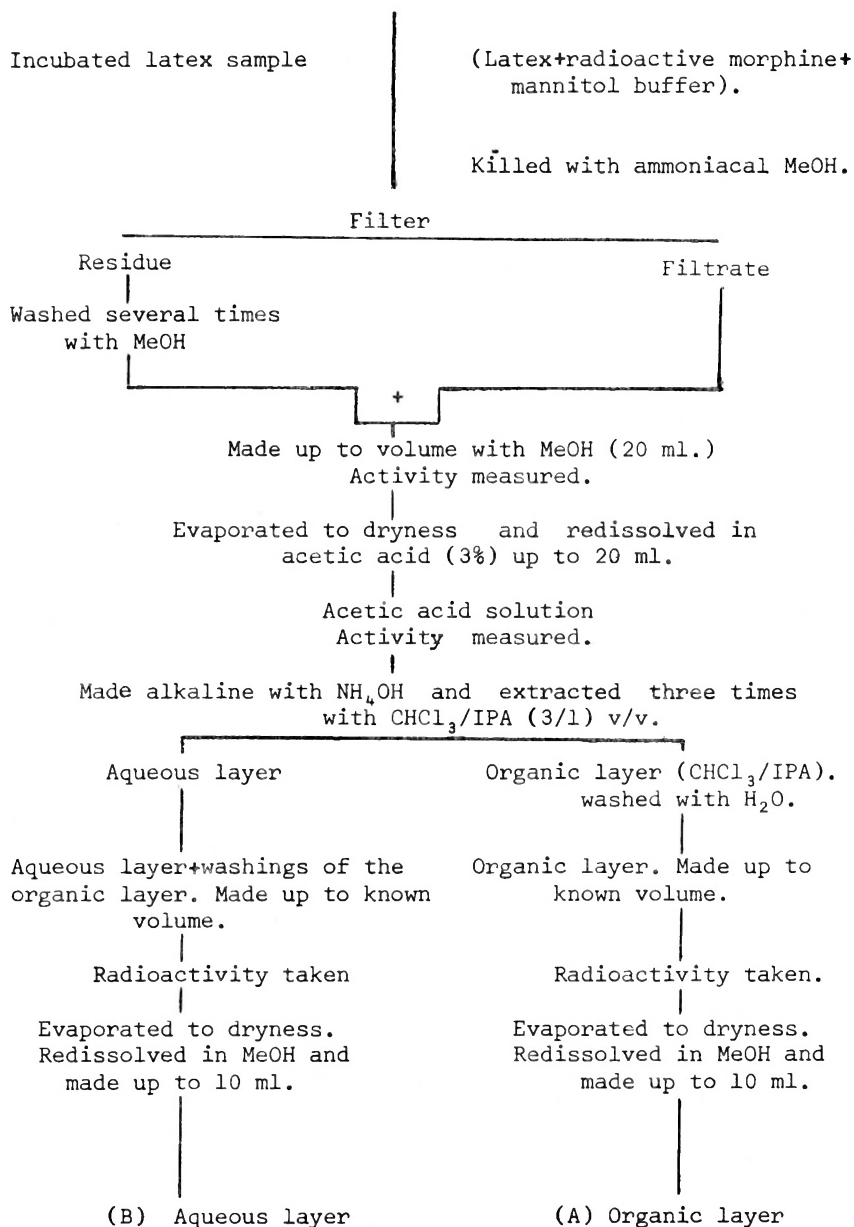
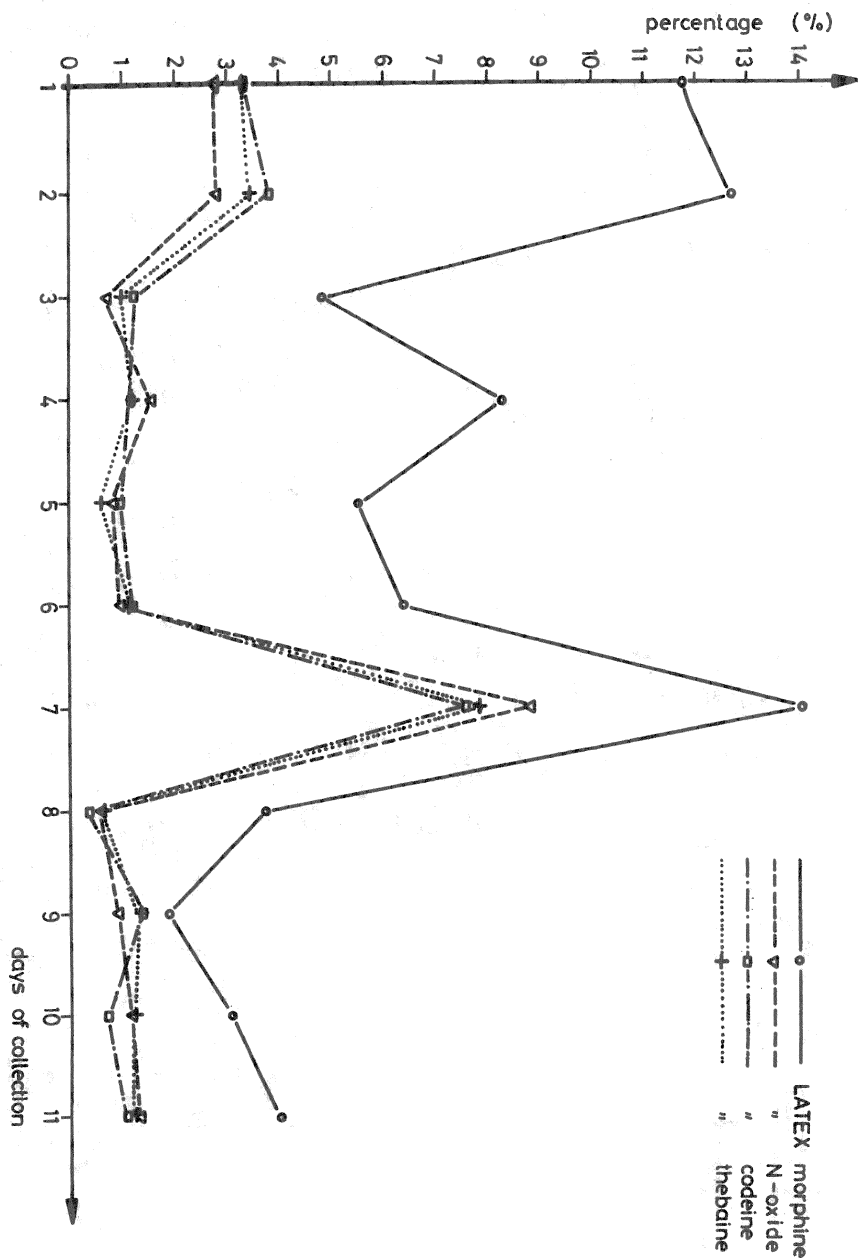


Fig. 1. Extraction technique /7/.

Fig. 2. The values of morphine, morphine N-oxides, codeine and thebaine obtained from capsule latex.



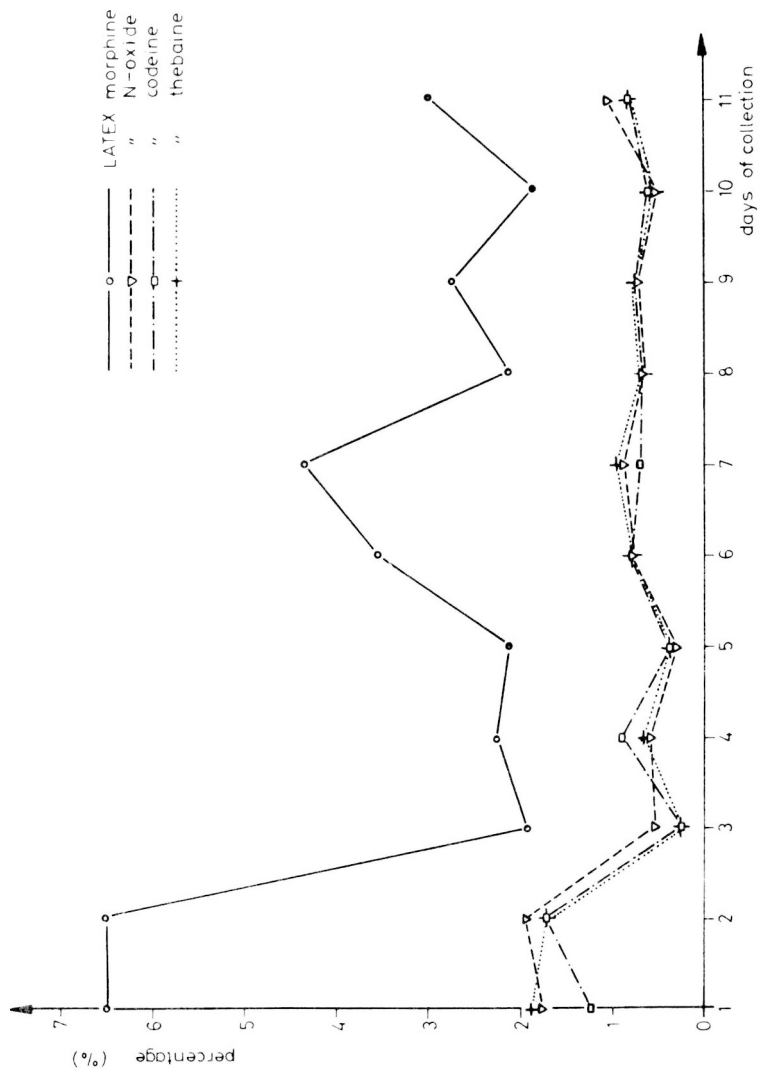


Fig. 3. The values of morphine, morphine N-oxides, codeine and thebaine obtained from stem latex.

According to the information taken from some people related with opium production, we know that the stems are being used for other purposes than alkaloid production in Anatolia. That is why, we wanted to estimate the amounts in the stems, hoping that the stems as well be indicated in alkaloid production in the country.

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