

## PAPAVER SOMNIFERUM'DAKİ BAZI ALKALOİTLER ÜZERİNDE ÇALIŞMALAR

### AN EVALUATION OF SOME ALKALOIDS OF PAPAVER SOMNIFERUM

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#### SUMMARY

This work covers up the comparison of the amounts of morphine, codeine, thebaine and morphine N-oxides in the dry capsules-dry stems and wet capsules-wet stems of *P. somniferum* L. collected in Turkey.

#### ÖZET

Bu çalışma *P. somniferum*'un kuru kapsülleri - kuru gövdeleri, yaş kapsülleri - yaş gövdelerindeki morfin, kodein, tebain ve morfin N-oksitlerinin yüzde verimlerinin mukayesesini kapsamaktadır.

#### INTRODUCTION

In a previous communication, (1) the % amounts of morphine, codeine, thebaine and morphine N-oxides only in the dry and wet capsules of *P. somniferum*, collected from plants of 1979 and 1980 had been determined. The present work, however is concerned with the comparison of the amounts not only in the capsules, but also covers up the comparison of the radio-assay of

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|     | MORPHINE    |             |             |             |
|-----|-------------|-------------|-------------|-------------|
|     | MORPHINE    | N-oxide     | CODEINE     | THEBAINE    |
| 1.  | 0.96 ± 0.03 | 0.46 ± 0.03 | 0.35 ± 0.03 | 0.35 ± 0.03 |
| 2.  | 2.59 ± 0.03 | 0.54 ± 0.03 | 0.68 ± 0.03 | 0.71 ± 0.03 |
| 3.  | 1.17 ± 0.03 | 0.42 ± 0.03 | 0.31 ± 0.03 | 0.46 ± 0.03 |
| 4.  | 0.79 ± 0.03 | 0.47 ± 0.03 | 0.36 ± 0.03 | 0.53 ± 0.03 |
| 5.  | 0.68 ± 0.03 | 0.24 ± 0.03 | 0.26 ± 0.03 | 0.26 ± 0.03 |
| 6.  | 0.98 ± 0.02 | 0.44 ± 0.03 | 0.31 ± 0.03 | 0.31 ± 0.03 |
| 7.  | 1.17 ± 0.03 | 0.55 ± 0.02 | 0.44 ± 0.03 | 0.45 ± 0.02 |
| 8.  | 0.85 ± 0.03 | 0.29 ± 0.02 | 0.40 ± 0.04 | 0.40 ± 0.04 |
| 9.  | 0.59 ± 0.03 | 0.32 ± 0.02 | 0.38 ± 0.02 | 0.37 ± 0.03 |
| 10. | 0.91 ± 0.03 | 0.32 ± 0.02 | 0.33 ± 0.03 | 0.34 ± 0.03 |
| 11. | 1.48 ± 0.02 | 0.43 ± 0.03 | 0.46 ± 0.03 | 0.47 ± 0.02 |

Table 1. The % values of the alkaloids in the dried capsules of 1981.

|     | MORPHINE    |             |             |             |
|-----|-------------|-------------|-------------|-------------|
|     | MORPHINE    | N-oxide     | CODEINE     | THEBAINE    |
| 1.  | 0.31 ± 0.04 | 0.09 ± 0.02 | 0.10 ± 0.02 | 0.10 ± 0.02 |
| 2.  | 1.55 ± 0.03 | 0.34 ± 0.02 | 0.70 ± 0.03 | 0.73 ± 0.03 |
| 3.  | 0.73 ± 0.03 | 0.35 ± 0.03 | 0.37 ± 0.03 | 0.37 ± 0.03 |
| 4.  | 0.59 ± 0.02 | 0.20 ± 0.02 | 0.27 ± 0.03 | 0.27 ± 0.03 |
| 5.  | 0.43 ± 0.03 | 0.15 ± 0.03 | 0.17 ± 0.03 | 0.16 ± 0.03 |
| 6.  | 0.46 ± 0.02 | 0.21 ± 0.02 | 0.23 ± 0.02 | 0.22 ± 0.03 |
| 7.  | 0.79 ± 0.02 | 0.32 ± 0.02 | 0.37 ± 0.03 | 0.36 ± 0.02 |
| 8.  | 0.26 ± 0.02 | 0.07 ± 0.01 | 0.08 ± 0.03 | 0.08 ± 0.02 |
| 9.  | 0.56 ± 0.02 | 0.28 ± 0.02 | 0.34 ± 0.04 | 0.34 ± 0.04 |
| 10. | 0.57 ± 0.02 | 0.12 ± 0.02 | 0.17 ± 0.04 | 0.17 ± 0.03 |
| 11. | 1.46 ± 0.02 | 0.36 ± 0.03 | 0.53 ± 0.03 | 0.51 ± 0.03 |

Table 2. The % values of the alkaloids in the dried stems of 1981.

|     | MORPHINE    |             |             |             |
|-----|-------------|-------------|-------------|-------------|
|     | MORPHINE    | N-oxide     | CODEINE     | THEBAINE    |
| 1.  | 0.38 ± 0.03 | 0.16 ± 0.03 | 0.17 ± 0.02 | 0.18 ± 0.02 |
| 2.  | 0.28 ± 0.03 | 0.07 ± 0.01 | 0.07 ± 0.01 | 0.08 ± 0.02 |
| 3.  | 0.63 ± 0.02 | 0.21 ± 0.03 | 0.27 ± 0.03 | 0.27 ± 0.02 |
| 4.  | 0.21 ± 0.03 | 0.09 ± 0.01 | 0.10 ± 0.03 | 0.10 ± 0.03 |
| 5.  | 0.27 ± 0.03 | 0.12 ± 0.03 | 0.13 ± 0.03 | 0.13 ± 0.03 |
| 6.  | 0.25 ± 0.03 | 0.09 ± 0.01 | 0.09 ± 0.01 | 0.09 ± 0.01 |
| 7.  | 0.46 ± 0.02 | 0.19 ± 0.03 | 0.20 ± 0.03 | 0.21 ± 0.04 |
| 8.  | 0.16 ± 0.02 | 0.06 ± 0.01 | 0.06 ± 0.01 | 0.62 ± 0.03 |
| 9.  | 0.50 ± 0.03 | 0.21 ± 0.04 | 0.22 ± 0.03 | 0.23 ± 0.02 |
| 10. | 0.36 ± 0.02 | 0.10 ± 0.02 | 0.11 ± 0.02 | 0.11 ± 0.02 |
| 11. | 0.86 ± 0.03 | 0.26 ± 0.03 | 0.30 ± 0.02 | 0.29 ± 0.03 |

Table 3. The % values of the alkaloids in the wet capsules of 1981.

|     | MORPHINE    | MORPHINE<br>N-oxide | CODEINE     | THEBAINE    |
|-----|-------------|---------------------|-------------|-------------|
| 1.  | 0.10 ± 0.03 | 0.03 ± 0.02         | 0.04 ± 0.02 | 0.04 ± 0.02 |
| 2.  | 0.46 ± 0.03 | 0.10 ± 0.03         | 0.12 ± 0.03 | 0.12 ± 0.03 |
| 3.  | 0.22 ± 0.03 | 0.04 ± 0.02         | 0.06 ± 0.02 | 0.06 ± 0.02 |
| 4.  | 0.20 ± 0.03 | 0.04 ± 0.02         | 0.06 ± 0.02 | 0.06 ± 0.02 |
| 5.  | 0.10 ± 0.02 | 0.04 ± 0.02         | 0.03 ± 0.03 | 0.03 ± 0.02 |
| 6.  | 0.28 ± 0.03 | 0.10 ± 0.03         | 0.10 ± 0.03 | 0.10 ± 0.03 |
| 7.  | 0.30 ± 0.02 | 0.18 ± 0.03         | 0.13 ± 0.03 | 0.13 ± 0.03 |
| 8.  | 0.09 ± 0.02 | 0.02 ± 0.02         | 0.02 ± 0.02 | 0.02 ± 0.02 |
| 9.  | 0.07 ± 0.01 | 0.03 ± 0.02         | 0.03 ± 0.03 | 0.03 ± 0.03 |
| 10. | 0.18 ± 0.02 | 0.08 ± 0.02         | 0.08 ± 0.02 | 0.08 ± 0.02 |
| 11. | 0.25 ± 0.02 | 0.07 ± 0.02         | 0.07 ± 0.03 | 0.08 ± 0.02 |

Table 4. The % values of the alkaloids in the wet stems of 1981.

the above-mentioned alkaloids in the dry capsules-dry stems, wet capsules-wet stems of the same plant, collected in a different year, 1981.

### EXPERIMENTAL

The plants used in this work were collected from Isparta Eğridir, Göndürlü Village.

Eleven samples were collected, the sixth being the lancing day. This is the day which is accepted to be the day of opium collection, by the farmers.

Known amounts of the capsules and stems were extracted with methanol and the extracts were fed with 1 ml of N-methyl-<sup>14</sup>C-morphine HCl (57 mCi/m mol, 2.1 G Bq/m mol) sol., (2). This mixture was then extracted as indicated in previous works (3-5), then applied to Si-Gel<sub>254</sub> plates, which were developed in CCl<sub>4</sub>-BuOH-MeOH-NH<sub>4</sub>OH (40-30-30-3).

The alkaloid bands were scraped, eluted with methanol and analysed by the Liquid Scintillation Counter.

### DISCUSSION

The results of the analyses are reported in Tables 1-4. According to the results, the alkaloid amounts, as observed in the pre-

vious years as well, show a rise either in the second or third days of collection. This of course needs further investigation. The dried samples contain more amounts of alkaloids compared with the wet ones. Furthermore, the stems as well contain considerable amounts of alkaloids, which may well play an important role in alkaloid production.

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