Tatsuhiko Nakano: Studies on the Alkaloids of Magnoliaceous Plants. XV.[1] Alkaloids of Cortex Magnoliae.* (Supplement).

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Among the drugs prepared from the Magnolia plants, there is the one known in pharmacy as *Cortex Magnoliae* ("Koboku" 厚朴). In the market of this country this drug is made from two different materials, of which one is called Chinese *Cortex Magnoliae* and the other, Japanese *Cortex Magnoliae*. It is said that the botanical source of the former is *Magnolia officinalis* Rehder et Wilson and that of the latter, *Magnolia obovata* Thunb. The investigations on the alkaloids of the authentic material of *M. obovata* Thunb. bark has already been made by Tomita, Inubushi, and Yamagata,[2] who demonstrated that it contains a quaternary base, magnocurarine. In the present work the author has taken up the study of the alkaloidal constituents of the above two specimens, and this paper describes the results thereby obtained. The specimen of Chinese *Cortex Magnoliae* was obtained from the Hong Kong market.

By the isolation procedure employing ammonium reineckate as the base precipitant, almost an equal amount of magnocurarine was identified from both materials. An attempt to detect the other quaternary bases was of no avail. It is of interest to mention here that while magnocurarine so far identified from the several species of the Magnolia plants growing in Japan is known to be of the *l*-type, the isolation of *d*-magnocurarine from *Gyrocarpus americanus* Jacq.[3] of the family Hernandiaceae has been reported recently.

Although the literature records the presence of the biscoclaurine alkaloids such as magnoline[4] and magnolamine,[5] from Caucasian *Magnolia fuscata*, and aztequine from Mexican *Talauma mexicana* Don.,[6] no such alkaloids were identified from the specimen of Chinese *Cortex Magnoliae*.

The specimens used in this experiment were obtained through the good offices of Mr. K. Hata of the Pharmacognosy Laboratory of this Institute, from Mr. T. Koshiro's drugstore in Osaka, to whom the author is grateful. The author is also indebted to Prof. Tomita for his encouragement in this work, and to the Ministry of Education for financial aids.

Experimental[7]

(A) **Chinese** *Cortex Magnoliae* (*Magnolia officinalis* Rehder et Wilson)—926 g. of the specimen obtained from the Hong Kong market was extracted with warm MeOH and the methanolic extract was treated with the procedure so far employed. The quaternary base was purified by reprecipitating it twice as the reineckate and then isolated as the picrate crystallizing from Me_2CO in yellow needles, m.p. 181~182° after drying at 100° *in vacuo* over P_2O_5; yield, 0.5 g. *Anal.* Calcd. for

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$C_{19}H_{24}O_3N \cdot C_6H_2O_7N_3$: C, 55.35; H, 4.83. Found: C, 55.47; H, 5.05. A mixed m.p. with a sample of *l*-magnocurarine picrate, m.p. 181~182°, showed no depression. The literature records for *d*-magnocurarine picrate m.p. 181.5~183°[3] and for *dl*-magnocurarine picarate with one mole of water of crystallization, m.p. 174°.[8]

(B) **Japanese** *Cortex Magnoliae* (*Magnolia obovata* Thunb.)—One kg. of the specimen obtained from the Osaka market in Japan was treated as described above, and yielded a quaternary base as the picrate forming from acetone yellow needles, m.p. 181~182°; yield, 0.7 g. *Anal.* Calcd. for $C_{19}H_{24}O_3N \cdot C_6H_2O_7N_3$: C, 55.35; H, 4.83. Found: C, 55.50; H, 4.90. Admixture with a sample of *l*-magnocurarine picrate, m.p. 181~182°, gave no depression in m.p.

Summary

As a result of investigations on the alkaloids of the specimens of Chinese *Cortex Magnoliae* (*Magnolia officinalis* Rehder et Wilson) and Japanses *Cortex Magnoliae* (*Magnolia obovata* Thunb.), it has been shown that both contain only magnocurarine as the quaternary base.

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