

YANG CHIN HUA

CHINESE POPULAR DRUG FOR ASTHMA

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Yang Chin Hua (洋金花), sold in Chinese drug stores in the form of leaves and stems, is being much used in the practice of Chinese Medicine. It is claimed to be very useful for asthma and usually gives instant relief when inhaled. When investigated chemically, the writer found that it contains as its chief active principle about 0.2 per cent of Hyoscine together with very little other solanaceous alkaloids. Consequently it must belong to one of the various species of solanaceous plants. The fact that Hyoscine paralyses the para-sympathetic nerve endings and in this way affects organs containing unstriated muscle, explains the physiological action of *Yang Chin Hua* as an asthma remedy. As most of solanaceous alkaloids, like Atropine, Hyoscyamine and Hyoscine are well known for their toxicity, it would be surprising, if no poisonings ever took place in too frequent administration of *Yang Chin Hua*, although poisoning statistics are not yet available in China.

EXPERIMENTAL

300 grams of *Yang Chin Hua*, obtained from a Cantonese drug store in Shanghai in the form of cut leaves and stems, were finely powdered and percolated with 95 per cent alcohol at room temperature for 2 days. The alcoholic extract was separated and concentrated in vacuum to a syrup at low temperature. The residue was taken up with a sufficient quantity of 1 per cent aqueous hydrochloric acid and filtered from the insoluble matter. The material obtained on rendering the acid solution alkaline with sodium carbonate was extracted with chloroform. The chloroform solution was dried and distilled, leaving behind an impure basic residue from which a well crystallised hydrobromide was isolated, having the following properties and characteristics of Hyoscine hydrobromide, $C_{17}H_{21}O_4N\text{HBr} \cdot 3H_2O$. When crystallised pure from alcohol, the hydrobromide obtained as above,

forms rhombic crystals and melts at 194°C after being previously dried at 100°C. When mixed with Hyoscine hydrobromide from E. Merck, its melting point remains unchanged. It is easily soluble in water, less so in 95 per cent alcohol and insoluble in most organic solvents. Its one per cent aqueous solution gave in 1 dm tube a specific rotation of -0.23° ; hence $[\alpha]_{25/D} = -23^\circ$. Evaporated to dryness on the water bath with concentrated nitric acid, it gives a residue which becomes violet on adding a drop of sodium hydroxide in alcohol, 3 drops of an aqueous solution containing one part of the hydrobromide in 100,000 parts of water, when introduced into the left eye of a cat induced maximal dilatation of the pupil within 30 minutes, while the right pupil was not affected. Its aurichloride, prepared from its hydrochloride, melts at 208°C. All these properties indicate that the hydrobromide isolated from *Yang Chin Hua* is Hyoscine hydrobromide an alkaloidal salt obtained for the first time by Schmidt (1) from *Scopolia japonica*.

DISCUSSION

With the isolation of Hyoscine and even without botanical identification, it can be said that *Yang Chin Hua* must belong to the family of solanaceous plants, most probably *Datura Metel Linne'*, which is known to contain Hyoscine as its chief active constituent (Kircher, Schmidt) (2) (3). The poisonous nature of solanaceous plants growing plentifully all over Asia is too well known to be related here, and is frequently used by thieves and sorcerers to induce delirium and subsequent coma. The sanitary statistics (4) of the Department of Home Affairs of the Japanese government in 1925 reported 28 poisoning cases by *daturas* and allied plants in 1923. In China, it is not likely to have any fewer relative number of cases of poisoning by this drug. The use of *datura* leaves as an asthma remedy dates back many centuries. In a lecture given before the "Things Chinese Society" October, 26, 1926, Read (5) quoted the following words; "The action of stramonium (*datura*) as an asthma remedy was, however, a popular Indian tradition which was made known to Europeans through a General Gent about 1802. It had been recommended to him by a native and he found so much relief from it that he introduced it to Dr. Anderson who was practicing in Madras. It was stated that General Gent used it so freely and so frequently that it caused his death." Greenish (6) mentioned that *Datura Tatula*, Linné, a variety of *datura* *Stramonium* with a violet corolla and purplish veins is used

together with stramonium leaves for making asthma cigarettes. In conclusion, the writer believes that the extremely poisonous nature of *Yang Chin Hua* should be made known to all Chinese practitioners of to-day.

The writer wishes to express his thanks to Dr. K. F. Yao, of Huchow General Hospital for suggesting this drug for research and Dr. G. H. Wang, of Peking University, for testing out its mydriatic action.

LITERATURE

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