were in part carried on, likewise arrive at the conclusion that the virus of *epithelioma contagiosum* and of *vaccinia* are not identical.

[1] Loewenthal, W., Kadowaki, Y., and Kondo, S., *Centbl. Bakt. Parasit. u. Infektk.*, 1925, xciv, 185-200.

[2] van Heelsbergen, T. 1920. Reprint from Tijdsch. vergelijk, geneesk., 3 Afl. 3, 1-35.

[3] Toyoda, T., *Zeitsch. Hyg., u. Infektk.*, 1924, cii, 592-612.

[4] Blanc, G., and Melanidi, C., *Comptes rend. de la Soc. de Biol.*, 1926, xciv, 825.

[5] Basset, J., 1926, *ibid.*, 525.

3206

A Preliminary Study of Leonurus Sibiricus (I-Mu-Tsao).*

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The seeds and stems of *Leonurus sibiricus L.* or I-Mu-Tsao (meaning "grass to benefit the mother" in Chinese) are widely used in China for post-partum hemorrhages and menstrual disorders.[1] Peckolt-Rio[2] states that the juice of the leaves is good for hemoptysis, and an infusion for hysteria and menstrual troubles. The same author succeeded in isolating a crystalline substance from the leaves which he called *leonurin.* No chemical or pharmacological study was made with this substance.

Our study is pharmaco-chemical in nature. An intravenous injection in dogs of 2 to 5 cc. of a 10 per cent decoction (*i. e.*, each 10 gm. of material to 100 cc. of water), made from the leaves and stem, resulted in a brief fall of blood pressure, decrease in kidney volume, contraction of uterus, and stimulation of intestinal peristalsis. An attempt was then made to isolate any active principle by percolating the powdered leaves and stems with alcohol, distilling off the latter from the percolate under reduced pressure, and removing the ordinary plant constituents (resins, pigments, etc.) by lead acetate, the excess of which was

* This work was planned at Peking Union Medical College, Peking, China, and concluded by K. K. Chen at the University of Wisconsin, Madison, Wisconsin.

precipitated with dilute sulphuric acid. When the filtrate is concentrated, a crystalline mass is obtained, which upon purification with alcohol produces the same physiological effects as the decoction. Half of a gram of this substance kills an anesthetized dog of 7.7 kilos by circulatory collapse. Qualitative chemical analyses show that these crystals are mostly potassium sulphate and potassium chloride, and that the parts of the plant under investigation contain no alkaloids. If the lead acetate in the percolate is removed by hydrogen sulphide instead of sulphuric acid, and the filtrate upon concentration is shaken with ether continuously for 15 hours, the ether extract after evaporation gives rise to a residue containing needle-like crystals. This residue is pungent in odor, soluble in dilute alcohol (about 12 per cent by volume), and contains no potassium salts. When injected into anesthetized dogs, it constricts the renal vessels and lowers the blood pressure slightly. The yield from 1.5 kilograms of the crude material is so small that no further study is possible.

The impression of this preliminary investigation is that the leaves and stems of *Leonurus sibiricus* probably contain an organic principle, producing renal vasoconstriction and a slight fall of blood pressure. Further experimentation is necessary for its isolation and action. The richness of potassium salts in the plant should be borne in mind.

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[1] Li, Shih-cheng, *Pentsao Kang Mu*, 1596, chap. xv.

[2] Peckolt-Rio, Th., *Ber. pharmac. Gesell.*, 1904, xiv, 384.

3207

Detoxification of and the Immunity Production to Ricin by Sodium Ricinoleate.

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The works of Larson[1] and his co-workers on sodium ricinoleate suggested the possibility of its use with other toxins such as those of plants and animals. Ricin was chosen first because the author, during the studies on the chemical basis of its toxicity,