It is evident that when given a choice of temperature and light combinations, the fish used is influenced somewhat by the attractiveness of light, even toward water much warmer than the optimum at the season. It is also evident that responses to light in fish are not remarkably accelerated by water warmed as much as 10 degrees above the normal of 20.5C. at the time these experiments were made.

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The pharmacology of Tang Kuei.

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Tang Kuei, identified by E. H. Holmes as the root of Angelica Anomala, var. Chinensis, is used in native medicine in the treatment of menstrual and puerperal disorders and sterility in women, being sold as thin slices of a woody root, having a sweetish taste and an aromatic odor. It is on the western market under the name of "Eumenol." Previous investigators[1, 2] ascribed its action to volatile ingredients, being unable to isolate from it an alkaloid, glucoside, or other active principle.

A simple extract of the drug, injected intravenously in anesthetized dogs, uniformly caused: (a) marked circulatory depression; (b) prolonged and striking diuresis; (c) contraction of uterine, bladder and intestinal muscle.

After removal of volatile material by distillation, the residue was still effective; the distillate sometimes caused contraction of uterus or gut, but large doses were required.

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1 Buffalini, *Annali di farmacologia*, 1900, 140.

2 Sakai, *Tokyo Igakeekai Zosshi*, 1916, xxx, 19.

The circulatory depression was due to direct action on cardiac muscle; the depressant material was precipitated by mercury. The residue contained sugar, which was removed by glacial acetic acid. From this residue crystals were obtained which were powerful stimulants to smooth muscle of uterus, intestine, and arteries, caused constriction, followed by dilatation of kidney vessels, with slight diuresis and a prolonged rise in blood pressure, from peripheral constriction. In the dog, 0.5 to 5 mg. caused contraction of the uterus, pregnant or non-pregnant; in the rabbit, similar results were obtained with 0.1 to 0.4 mg. Intestinal muscle was affected also, but larger doses were required. Isolated rabbit uterus was strongly stimulated by one part in two millions of this material; strips of human uterus responded to one part in one million; isolated rabbit gut showed an increase in rhythmic movement and in tone, but never a tonic spasm, and the effect was not influenced by atropine; in all these preparations, the effect disappeared on substituting fresh solution, and could be brought out repeatedly by adding more of the drug. The physiologic effects were very similar to those of pituitary extract, but, unlike pituitary, could be brought out repeatedly without weakening or reversal.

The nature of these crystals remains undetermined. They are organic, are non-nitrogenous, non-glucosidal, freely soluble in water, and melt at 52-58°C. We believe that they are responsible for the therapeutic smooth muscle effects of Tang Kuei.

Other constituents of the drug include (a) a yellowish brown volatile oil, probably identical with the lactone of Sakai (2) which causes contraction of the dog's uterus and intestine, but also produced cardiac depression and severe renal irritation; (b) cane sugar of which the root contains about 40 per cent., and which, together with irritation by volatile material, is probably responsible for most of the diuretic effects produced by the drug, though the crystalline material is weakly diuretic; (c) cardiac depressant material, of undetermined nature.

The crude drug contains volatile oils which act on smooth muscle and produce renal lesions like the emmenagogue oils; the crystalline active principle is water soluble, and therefore this drug may be more effective, though the volatile material makes it little, if any, safer than the emmenagogue group.