

### Inhibitory Effect and Synergism of Cernitin™ Pollen Extract on the Urethral Smooth Muscle and Diaphragm of the rat

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Inhibitory effects of Cernitin™ pollen extract (CN-009), consisting of T-60 (a water-soluble extract) and GBX (an acetone-soluble extract) at a ratio of 20:1, were investigated in rat urethral smooth muscle and diaphragm. In the urethral smooth muscle, CN-009 ( $3.0 \times 10^{-4}$  approximately  $3.0 \times 10^{-3}$  g/ml), T-60 and GBX (corresponding to CN-009) concentration-dependently inhibited the noradrenaline (NA,  $10^{-5}$  g/ml)-induced contraction. According to Burgi's calculation, the inhibition by T-60 and GBX was synergistic. On the other hand, GBX inhibited the NA-contraction non-competitively and also inhibited the K<sup>+</sup>-contraction. In contrast, T-60 tended to inhibit competitively, but did not affect the K<sup>+</sup>-contraction. In the diaphragm, CN-009 ( $5.25 \times 10^{-3}$  approximately  $2.1 \times 10^{-2}$  g/ml) concentration-dependently inhibited the nerve stimulation-induced twitch response. T-60 (corresponding to CN-009) showed no effect, while GBX slightly inhibited the twitch response. The effects of T-60 and GBX were synergistic. The inhibitory effects of CN-009 ( $2.1 \times 10^{-2}$  g/ml) and GBX ( $1.0 \times 10^{-2}$  g/ml) were specific against the nerve stimulation and were not antagonized by neostigmine ( $1.0 \times 10^{-5}$  g/ml). These results suggested that these effects were neither musculotropic nor competitive against ACh. In conclusion, CN-009 concentration-dependently inhibited the urethral contraction and the skeletal muscular twitch response. It was suggested that T-60 and GBX had different mechanisms and inhibited the response synergistically.

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