THE EFFECTS OF HERBAL EXTRACTS COMPLEX INCLUDING CORNELIAN CHERRY(KH-204) ON PARTIAL URETHRAL OBSTRUCTION INDUCED DETRUSOR OVERACTIVITY IN RATS : ON THE ASPECTS OF NITRIC OXIDE PATHWAY AND OXIDATIVE STRESS

Hypothesis / aims of study
The nitric oxide pathway is correlated to BPH/LUTS by various evidences. Previous study explain that herbal formula KH-204 may be attributed to its antioxidant effects or to an elevation in NO-cGMP activity. We investigate the effects of herbal formula KH-204 on partial urethral obstruction induced detrusor overactivity.

Study design, materials and methods
KH-204 was consisted of 5 seed of 5 different kinds of berry plants; It included Cornus Officinalis Sieb. Et Zucc (32%), Lycium chinense Mil (32%), Rubus coreanus Migquel (16%), Rubus coreanus Migquel (16%), and Schizandra chinensis Baillon (4%). 24 Sprague-Dawley rats were randomly assigned to four groups; Sham-operated(control), partial urethral obstruction induced overactive, solifenacin(0.03mg/kg) treated overactive, KH-204(200mg/kg) treated overactive. Control and overactive group were administered distilled water for 4 weeks and solifenacin and KH-204 group was treated each medication for 4 weeks. After treatment, all rats were performed cystometrography and after that, each groups were sacrificed and obtained bladder tissue for identifying muscarinic receptor, eNOS, RhoA, Rock-1,2, 8-OHDG, superoxide dismutase, IL-6, 8, TNF-a. bladder tissue was stained and identified muscle-to-collagen ratio.

Results
The presence of Muscarinic receptors were no significant difference between solifenacin and KH-204 group. (M2;0.31 vs. 0.33, p=0.854, M3;0.38 vs. 0.39, p=0.988) But there were significant differences between solifenacin and KH-204 on eNOS, RhoA, Rock-1, and Rock-2. Muscle-to-collagen ratio was statistically lower in OAB and solifenacin group but no significant difference between control and KH-204 group. Parameters for oxidative stress such as 8-OHDG, SOD was similar results. And also KH-204 group has anti-inflammatory effect which was inferred by no significant difference between control and KH-204 group in the value of IL-6, IL-8, TNF-a, but OAB and solifenacin group were increased in IL-6, IL-8, TNF-a. In the cystometrography, mean maximal pressure were different in each group, and OAB and solifenacin group were significant lower than control/ KH-204 group. And mean contraction interval was lowest in OAB, and KH-204, solifenacin, and highest in control group. And there was no significant difference between solifenacin and KH-204 group.

Interpretation of results
The herbal extracts complex KH-204 has similar pharmacologic effect to solifenacin. And also there were anti-inflammatory effect and antioxidant effects in KH-204.

Concluding message
Enhancement of KH-204 by Nitric oxide pathway way had effects on partial urethral obstruction induced detrusor overactivity such as benign prostatic hyperplasia related detrusor overactivity. It seemed that herbal extract formula KH-204 was another choice for control the detrusor overactivity.

References

Disclosures
Funding: no Clinical Trial: No Subjects: ANIMAL Species: Rat Ethics Committee: the Institutional Animal Care and Use Committee in School of Medicine, The Catholic University of Korea