# 2003 年アジア獣医科大学協議会（AAVS）賞
# 受賞者講演

# The 2003 Asian Association of Veterinary Schools (AAVS) Award

**シンポジウム**
**アジア各国におけるコンパニオンアニマル研究の最先端**
Symposium
Frontiers of Companion-Animal Research in Asia

**3 月 31 日（月）　16:00 – 17:30　第 5 会場**
March 31 (Mon), 2003 16:00 – 17:30
at Meeting Room, 4th floor, Bldg 3, Faculty of Agriculture, The University of Tokyo

**座長：　林　良博　（東大）**
Chairman:　Yoshihiro Hayashi (University of Tokyo)

*Hypoglycemic effect of vanadium diabetic dogs*
Hwa-Young Youn (Seoul National University)

*Age-related dementia-like conditions and brain lesions in dogs*
Hiroyuki Nakayama (University of Tokyo)

*Canine limb allotransplantation a clinical attempt in veterinary medicine*
Lih-Seng Yeh (National Taiwan University)

*Effect of finasteride on benign prostatic hypertrophy in dogs*
Kaitkanoke Sirinarumitr (Kasetsart University)

# アジア獣医科大学協議会賞授賞式にあたって

林　良博 （AAVS 会長、東大）

昨年設立されたアジア獣医科大学協議会(AAVS)賞は今回で２回目となった。今年の受賞対象はコンパニオンアニマル研究分野で、別紙の４氏が受賞者として選出されたので、４氏に統一テーマ「アジア各国におけるコンパニオンアニマル研究の最先端」と題したシンポジウム講演を依頼した。いずれもアジア各国の獣医学における優れたコンパニオンアニマル研究であり、受賞者たちの今後の活躍が期待される。

ところでアジア諸国のコンパニオンアニマル研究は、欧米のそれらと比較して発展途上にあるといえるが、最近の発展は目覚しいものがある。本年の２月 12 日に、ソウル大学獣医学部がスウォン市からソウルのメインキャンパスに移転したことを祝う式典が催されたが、すでに先行移転していた動物病院を含め、最新装置を備えた 1 万 5 千平米の堂々たる陣容である。数年以内に日本の水準を上回るのではないかと思われる。他のアジア諸国の獣医科大学・学部においても、施設・設備等は不充分であっても、小動物臨床に対する国民の期待は急激に高まりつつあり、それに対応したコンパニオンアニマル研究の水準が高まっている。今回のシンポジウムは、アジア諸国におけるコンパニオンアニマル研究の現状を知る上でも、貴重な機会となると思われる。

ところでアジア獣医科大学協議会（AAVS）には、タイ、マレーシア、インドネシア、ベトナム、フィリッピン、台湾、中国、韓国、日本のアジア主要 9 カ国の獣医科大学が正会員としてすでに加盟し、シドニー大学やワシントン州立大学等が準会員としての加盟を検討しているように、ようやく組織としての形態が整いつつある。来年 8 月には、第３回会議がマレーシアで開催される予定である。これに向けて、今後アジアの各獣医科大学に加盟を広く呼びかけていく予定であり、日本の各獣医学部・学科の参加を希望する。また、来年度の AAVS 賞は産業動物獣医学がその研究対象となる。加盟された学部・学科の若手教員は、どうか振るって応募していただきたい。

# Hypoglycemic effect of Vanadium diabetic dogs

Hwa-Young Youn (Seoul National University)

The investigations about the hypoglycemic effect of oral administration of vanadium have been studied previously in many other species such as rats, mice, and even humans. But there was no known report about the glucose lowering effect of vanadium in diabetic dogs. So the purpose of this study was to evaluate the hypoglycemic effect of oral administration of vanadium in diabetic dogs. Diabetes mellitus in dogs without acute renal failure were selected for this experiment. And the diabetic dogs that expressed the side effects of vanadium were also excluded. The rest dogs (n=10) were divided to 2 groups, the one was diabetic control (DC) group (n=4) and the other was vanadium treated (DV) group (n=6). The fresh water was supplied to the dogs in DC group. But the sodium metavanadate solution (0.1 – 0.2mg/ml) was supplied to the dogs in DV group from 1 week after alloxan injection. And the fasting glucose levels, fructosamine, serum chemistry profiles were compared between two groups weekly for 3 weeks. The fasting blood glues levels in DV group were significantly lower than those in DC group ($p<0.01$). Fructosamine levels in DV group were also lower than those in DC group ($p<0.05$). The serum chemistry profiles were not different significantly between two groups. But the cholesterol levels were significantly lower n D group than DC group ($p<0.05$). It was proved that oral vanadium administration has the hypoglycemic effect in chemically induced diabetic dogs.

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# Age-related dementia-like conditions and brain lesions in dogs

Hiroyuki Nakayama (The University of Tokyo)

Some mammalian and avian species have spontaneous age-dependent neuropathology resembling Alzheimer's lesions. Among them, the brain of the aged dog possesses senile plaques and amyloid angiopathy, which characterize Alzheimer's brains. We have defined the dementia-like condition of aged dogs and examined which histopathological mechanism(s) is responsible for the condition. A series of studies revealed that the dementia-like condition is significantly related to the number of apoptotic brain cells including both neurons and glial cells, but not to the number of senile plaques. The frontal lesions are the most crucial for the condition. Amyloid angiopathy is also detected in the brain of aged dogs, but not important for dementia. Neurofibrillary tangles, which are the most characteristic lesion in the Alzheimer's brain, were not detectable in any aged canine brains. The histochemistry for detecting antioxidant enzymes revealed that the number of superoxide dismutase (SOD)-depleted neurons and SOD-positive glial cells increased in an age-dependent manner. The free radical-mediated cell injury might play a crucial role(s) for brain cell apoptosis in aged dogs. In addition, we performed morphological analysis of canine senile plaques using novel techniques such as fractal and 3-dimentional geometry. The results revealed different formation process of the two types of canine senile plaques, diffuse and mature plaques. The aged dogs would be useful animal models to elucidate the pathomechanism of Alzheimer's disease.

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# Canine limb allotransplantation a clinical attempt in veterinary medicine

Lih-Seng Yeh (National Taiwan University)

To study the feasibility of canine limb allotransplantation under novel combination of immunosuppressive agents, the right forelimb of a 2-year-old male Shiba dog was transplanted to a 7-year-old female terrier recipient suffered from an amputation 3 years earlier. The animals were compatible in body size and blood type. Rejection was controlled by administering a combination of prednisolone, tacrolimus and leflunomide. The limb allograft survived the early postoperative phase with good perfusion and hair re-growth. Very early signs of rejection were noted on day 40, which progressed despite increasing the dose of the immunosuppressive agents. The graft was totally rejected and amputated on day 60. Histologically, vascular rejection was identified as the prime reason leading to graft failure. No microchimerism of Y-chromosome- positive cells were detected by PCR at any time during the period. In conclusion, canine limb allotransplantation is technically feasible yet rejection control is challenging. Further investigation into an effective and nontoxic immunosuppressive protocol is warranted.

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# Effect of Finasteride on Benign Prostatic Hypertrophy in Dogs

Kaitkanoke Sirinarumitr (Kasetsart University)

Benign prostatic hypertrophy (BPH) is a spontaneous disease occurring in at least 80% intact male dog over 5 years of age. Associated clinical signs include constipation, blood in semen or urine, and dysuria. BPH dogs are predisposed to prostatic cysts, infection, and abscessation. Dihydrotestosterone (DHT) is well accepted as a key hormone in stimulating enlargement of the prostate by enhancing growth in both stromal and glandular components. DHT is metabolized from testosterone (T) by the inhibitable enzyme, 5α-reductase. The treatment objective in dogs with BPH is to decrease prostatic size, which alleviates signs related to BPH. Castration is the recommended treatment in most dogs, however, medical treatment is needed for breeding dogs or for dogs which are poor risks for anesthesia or surgery.

Finasteride is a synthetic steroid which inhibits 5α-reductase and blocks the conversion of T to DHT. Finasteride is approved for use in treatment of BPH in human beings.

The study of effects of finasteride on BPH dogs was composed of 4 experiments. The first experiment was a dose response study. The effect of finasteride [0.1-0.5 mg/kg, PO, q 24 h for 7 days (one tablet (5 mg) per dog in dogs weighing 10-50 kg)] on serum concentrations of DHT and T in normal adult intact male dogs less than 5 years old. The second experiment, prostatic volume measured by ultrasonography was compared to actual prostatic volume measured by water displacement in 12 intact male dog cadavers. The third experiment determined the effect of finasteride (0.1-0.5 mg/kg, PO, q 24 h for 16 weeks) on prostatic size, serum concentration of DHT and T, and semen quality in natural BPH dogs in a double-blind, placebo controlled clinical trial. The last experiment, ejaculated prostatic cells from BPH dogs with finasteride- induced prostatic involution were examined for morphologic evidence of programmed cell death, apoptosis.

The results revealed that finasteride at the dose of 0.1-0.5 mg/kg [one tablet (5 mg)/50 kg BW] orally once daily for 16 weeks decreased prostatic diameter by 20 %, prostatic volume by 43 %, and serum concentration of DHT by 58 % in dogs with spontaneous BPH. Finasteride has no effect on serum concentration of T. Finasteride caused decrease in semen volume, but had no other effect on semen quality or libido during 16 weeks of treatment. Percent decrease in prostatic volume of BPH treatment dogs (detectable by ultrasonography) was greater than percent decrease in prostatic diameter (detect by radiography) suggests that ultrasonography, not radiography, is a better way to evaluate change in prostatic size during medical treatment in dogs with BPH. Clinical signs related to BPH in dogs were alleviated within 1-4 weeks after onset of finasteride treatment. During and after finasteride treatment, the treated dogs had normal libido during copulation, successfully bred to bitches, and the bitches became pregnant with normal pregnancy, gestation length and litter size.

Prostatic volume of the dog can be predicted using the formula [1/2.6 (L x W x D)] + 1.8; where L = greatest cranio-caudal diameter, W = greatest transverse diameter, and D = greatest dorso-ventral diameter of the prostate determined by ultrasonography. Finasteride-induced prostatic involution in BPH dogs was demonstrated to occur by programmed cell death (apoptosis), detected as early as 1week after onset of finasteride treatment.

In conclusion; finasteride is a safe and effective medical treatment for benign prostatic hypertrophy in dogs.

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"**Kamolpatana"** was the last name before marriage.