

mechanism to inflammation and accelerated aging and many other chronic diseases in human. *Mentha arvensis* (MA) is a traditional folk medicine having antioxidant and anti-inflammatory activities. The present study was performed to investigate the anti-stress role of MA and fermented MA (FMA) on immobilized stress in rats. Rats subjected to immobilization are widely understood to be a convenient and reliable model to mimic psychological stress.

**Materials and Methods:** The rats were orally administered with MA (100 mg/kg) and FMA extract (100 mg/kg) once daily, followed by 1 h preceding immobilization stress (2 h/day) for 14 days. The anti-stress role of MA and FMA extract in rats was assessed by body weight, food intake, malondialdehyde (MDA), nitric oxide (NO), enzyme-linked immunosorbent assay (ELISA) and histological assays.

**Results:** In this study, we found that pretreatment with MA and FMA extract notably improved the body weight, daily food intake and duodenum histology in rats. Immobilization-induced oxidative stress was considerably mitigated via inhibition of MDA and NO in serum level. Moreover, MA and FMA markedly decreased corticosterone,  $\beta$ -endorphin and increased serotonin in serum level respectively.

**Conclusions:** These results suggest that both MA and FMA could be ameliorating immobilization stress by reducing oxidative stress and regulating stress-related hormones in rats. Specially, FMA has shown greater anti-stress activity than that of MA.

#### References:

- [1] Sheikh, N.; Ahmad, A.; Siripurapu, K.B.; Kuchibhotla, V.K.; Singh, S.; Palit, G. *Journal of ethnopharmacology* 2007, 111, 671-676.
- [2] Verma, S.M.; Arora, H.; Dubey, R. *Ancient science of life* 2003, 23, 95-99.

P-199

### Comparative spermatogenic analyses between scrotal heat stress mice and aged male mice for the screening of andropause animal model

Sol-Ji Choi, Sang-Yoon Nam\*

College of Veterinary Medicine and Veterinary Medical Center, Chungbuk National University, Cheongju 28644, Korea

**Introduction:** Like women menopause, many men have several symptoms after forties that called partial androgen deficiency in aging male (PADAM). As getting older, especially reaching at PADAM period, man's sexual ability declines due to impaired spermatogenesis and decreased the number of Leydig cells etc. [1]. The age of mouse is approximately replaced with the age of man based on lifespan: 6-month-old mouse to 19-year-old man, 12-month-

old mouse to 33-year-old man, 15-month-old mouse to 40-year-old man [2]. The purpose of this study was to examine whether the testes in scrotal heat stressed male mice were histologically similar to those in naturally old rats.

**Materials and Methods:** Male mice aged 7-8 weeks were divided into 5 groups (0, 5, 10, 15, and 20 minutes) for a scrotal heat stress. Each group was anesthetized, and the lower parts of their bodies (around scrotum) were submerged in a 42°C-water bath for each predetermined time. After a week, their testes and epididymides were extracted and fixed by Bouin's solution. Those of mice aged 6, 12, and 15 months were under the same procedure (old group). All of these extracted testes and epididymides were made of histological slides. The slides of heat stress groups were compared with those of naturally old groups for each age through the microscope.

**Results:** The degree of damage to the testes gradually increased as the time of heat stress increased in the heat stress groups. In both the heat stress groups (between 10 min and 15 min) and the naturally old group (20-month-old mice) were histologically similar in that the number of Leydig cells was reduced, that germ cell connections in the tubules were loosened, and that the spermatogenic cells were excreted centrally from the tubules.

**Conclusions:** The testes in heat stressed male mice were histologically similar to those in naturally old rats.

#### References

- [1] Wolf-Bernhard Schill. *Fertility and sexual life of men after their forties and in older age.* 2001 Mar; 3: 1-7
- [2] Robert Quinn, D.V.M.. *Comparing rat's to human's age: How old is my rat in people years?* *Nutrition* 21 (2005) 775-777

P-200

### Isolation of CD4+CD25+ Canine Regulatory T cells

Jin-Wook Kim, Gun-Hwi Lee, Kyung-Chul Choi\*

Laboratory of Biochemistry and Immunology, College of Veterinary Medicine, Chungbuk National University, Cheongju, Republic of Korea

**Introduction:** Regulatory T cells have potent utilization on treating autoimmune diseases and other immune-related diseases. In this study, we successfully isolated canine regulatory T cells (cTreg) using flow cytometry. However, the amount of the cells is too low to render further data. Therefore, we would like to suggest future perspectives on researching cTreg.

**Materials and Methods:** Firstly, we collected 20 cc of canine blood from a 2 year-old dog. Then, peripheral blood mononuclear cells (PBMCs) were collected using Ficoll-Hypaque solution. We acquired  $1.5 \times 10^7$  cells and divided