Cite this as: Supatcharee ARUN, Jaturon BURAWAT, Wannisa SUKHORUM, Apichakhan SAMPANNANG, Nongnut UABUNDIT, Sitthichai IAMSAARD, 2015. Changes of testicular phosphorylated proteins in response to restraint stress in male rats. *Journal of Zhejiang University-Science B (Biomedicine & Biotechnology)*, **17**(1):21-29. [doi:10.1631/jzus.B1500174]

Changes of testicular phosphorylated proteins in response to restraint stress in male rats

Key words: Restraint stress rats, Steroidogenic acute regulatory (StAR) protein, Testicular phosphorylated protein

Rationale

Stress

Proven

Phosphorylated proteins

- **Regulation of various cell proliferation, division, growth, and differentiation** (Hunter and Cooper, 1985; Hunter, 1987; Hanks *et al*., 1988; Ullrich and Schlessinger, 1990)
- **Localization in Sertoli and spermatic cells, assumed to have the roles in spermatogenesis** (Arad-Dann *et al.,* 1993)
- **Requirement for sperm capacitation and acrosome reaction** (Kopf and Gerton, 1991; Yanagimachi, 1994; Visconti *et al.,* 1998)

Adverse effects in the male reproductive system

- **Erectile dysfunction** (Nathan, 1986; Kennedy *et al.,* 1999; Ernst *et al.,* 1993)
- **Decreased sperm quality** (Priya *et al.,* 2014; Rao *et al*., 2015; Zhang *et al*., 2015)
- **Decreased testosterone levels** (Retana- Marquez *et al*., 2003; Weissman *et al.,* 2009; Lin *et al.,* 2014; Prabsattroo *et al.,* 2015)
- **Decreased steroidogenic acute regulatory (StAR) and cytochrome P450 side chain cleavage enzyme (CYP11A1) protein expressions** (Lin *et al.,* 2014)
- **Damaged testicular tissue** (Rai *et al.,* 2003; 2004; Aziz *et al.,* 2013;Prabsattroo *et al.* 2015)

No reports of alteration of phosphorylated protein in stress testis

Not proven

Causing

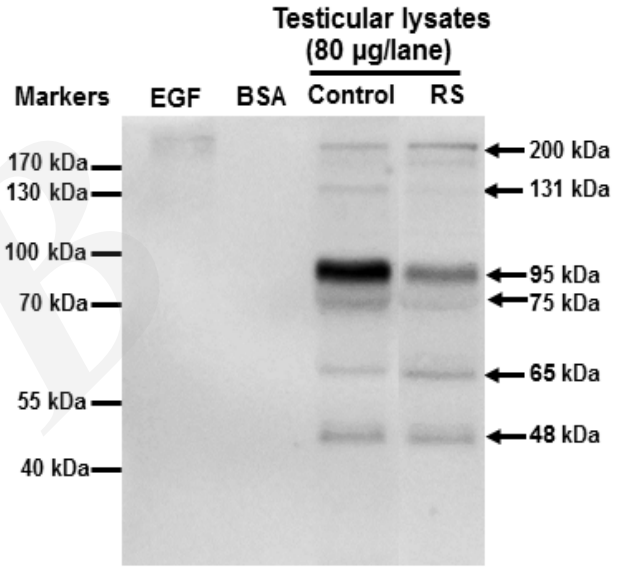
Male infertility

Outcome

This study

Acute immobilization stress in male rats

- Sperm concentration
- Testosterone hormone
- Corticosterone hormone
- Sperm head abnormality
- Testicular tissue damage



Associated

95 kDa testicular phosphorylated protein

Causes of infertility in stress males

IZUS-B