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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 spermatid 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

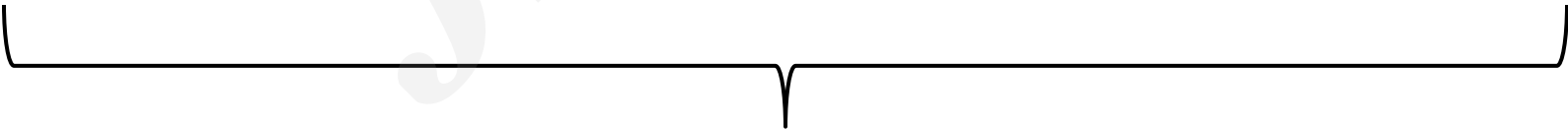
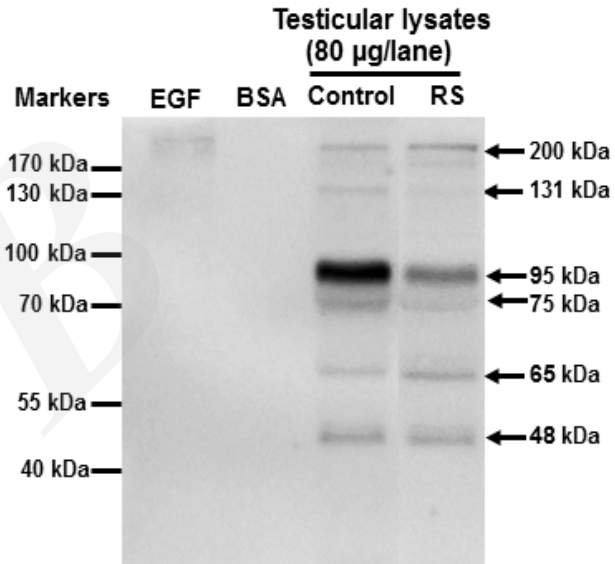
This study

↓
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