

ORAL-09-05

SIGNALLING EFFECTS OF TNF- α AND ITS RECEPTORS IN MOOD-LIKE BEHAVIOUS.

Camara M^{1,2}, Jaehne EJ¹, Corrigan F¹, Anscomb H², Baune BT¹.

1. Discipline of Psychiatry, University of Adelaide, Adelaide, South Australia
2. Discipline of Anatomy, James Cook University, Townsville, Queensland

TNF- α is shown to be essential for cognitive development and plays a role in anxiety-like behaviour, partially through modulating neurotrophin expression. While we have previously shown that in young mice (3 month old) lack of TNF- α and its receptors did not affect exploratory or depression-like behaviour, it is unclear whether this role changes with ageing. This study was therefore carried out to study the effects of lack of TNF- α and its receptors on mood-like behaviours and neurotrophin expression in older mice. 6 month old TNF-KO, TNF-R1 KO and TNF-R2 KO and wild-type (WT) control mice were tested (n=14 per strain) for exploratory behaviour (Hole board exploration test, HBE) and depression-like behaviour (forced swim test, FST). Levels of NGF expression in hippocampal tissue were also measured (ELISA). TNF-KO ($P < 0.05$) and TNF-R1 KO ($P < 0.01$) mice showed impaired exploration compared to age matched WT mice. Interestingly TNF-KO and TNF-R2 KO mice had significantly lower immobility in the FST than WT mice ($P < 0.001$), indicating lower depression-like behaviour in these mice. However ELISA data showed no differences in NGF expression. It appears that signalling of TNF- α and TNF-R1 is important for maintaining normal exploratory behaviour in older mice. Furthermore lack of TNF- α and TNF-R2 in older mice appears protective against depression-like behaviour. This may be caused either by enhanced signalling of TNF-R1 in the TNF-R2 KO mice, or by chronic activation of TNF- α through TNF-R2 binding, but more work is needed to validate this. (245 words)