

Abstract

The naked mole rat has unique biologic characteristics that include atypical inflammatory responses. Lipopolysaccharide induces inflammation which triggers brain centers controlling feeding, and behavior to result in “sick animal behavior”. We characterized the bodyweight, locomotor, and other behavioral responses of this rodent to lipopolysaccharide administration. Lipopolysaccharide caused weight losses, which were not prevented by TAK 242. In the open field test, lipopolysaccharide did not depress locomotion, while urination, defecation, and activity freezing were rare. The animals exhibited walling but not rearing and fast backward movements that were unaffected by lipopolysaccharide. Failure to depress locomotion suggests either a unique immunity-brain crosstalk or motor responses/centers that tolerate depressive effects of inflammation. The absence of activity freezing and rarity of urination and defecation suggests that novel environments or lipopolysaccharide do not induce anxiety, or that anxiety is expressed differently in the animal. The absence of rearing could be due to the design of the animal’s locomotor apparatus while fast backward movement could be a mechanism for quick escape from threats in the tunnels of their habitat. Our results elucidate the unique biology of this rodent, which elicits interest in the animal as a model for inflammatory research, although the findings require mechanistic corroborations.