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Effects of chronic administration of the GABA-B receptor agonist baclofen on food intake and body weight in rats.

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It has previously been demonstrated that acute systemic administration of baclofen increases food intake in non-deprived rats (Ebenezer *et al.*, 1992). In the present study we investigated the effects of chronic i.p. administration of baclofen on food intake and body weight in rats.

Adult male Wister rats ($n = 18$; starting body weights: 400 – 470 g) were divided into 3 equal groups and injected i.p. with either saline (Group 1), baclofen (1 mg kg^{-1} ; Group 2), or baclofen (4 mg kg^{-1} ; Group 3) and placed separately into experimental cages with free access to food and water and cumulative food intake measured. This was repeated on a daily basis for 4 weeks. During week-ends, the rats were given the appropriate treatments of saline or baclofen, but food intake was not measured. Body weight for each rat was also recorded and expressed as a percentage change relative to body weight on treatment Day 1. Analysis (ANOVA and the Tukey *post-hoc* test) of the data obtained in Fig. 1A showed that baclofen (1 and 4 mg kg^{-1}) significantly ($P < 0.05$) increased food intake on each test day (with the exception of Day 1 for the 4 mg kg^{-1} dose and Day 7 for both doses) and that tolerance did not develop to the hyperphagic responses with repeated administration. These results confirm and extend previous findings with a 2 mg kg^{-1} dose of baclofen (Patel *et al.*, 2008). Interestingly, however, while the body weight gain of the rats chronically treated with the 1 mg kg^{-1} dose (Group 2) did not differ significantly from those of the control rats (Group 1), the rats treated with the 4 mg kg^{-1} dose (Group 3) showed small but significant decreases relative to controls that were apparent up to test day 14 (see Fig. 1B). The latter results are agreements with the observations by Addae *et al.* (1986) that chronic administration of baclofen (2 mg kg^{-1} , twice daily for 15 days) significantly decreased body weight gain in rats. The observation that both doses of baclofen stimulate feeding but that only the high dose affects body weight gain suggest that baclofen may act through different mechanisms to affect food intake and body weight.

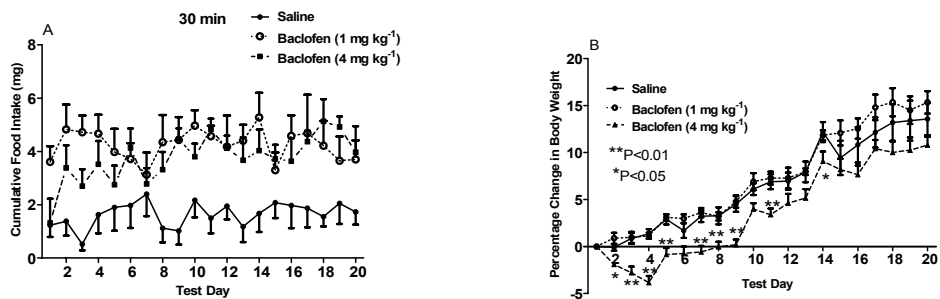


Fig.1. Effects of chronic administration of baclofen on (A) food intake measured 30 min after administration, and (B) percentage change in body weight. Vertical lines represent + / - s.e. mean.

Addae, J.I. *et al.* (1986) *Neuropharmacol.* 25, 627 – 631.

Ebenezer, I.S. *et al.* (1992) *Neuropharmacol.* 31, 39 – 42.

Patel, S.M. *et al.* (2008) *Eur. J. Pharmacol.* 593, 68 – 72.