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LACTOBACILLUS REUTERI DSM 17938 AND *BIFIDOBACTERIUM LONGUM* ATCC BAA-999 NORMALIZE SLEEP PATTERNS IN PRENATAL STRESS RATS

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Background and aims: Maternal stress and anxiety during pregnancy and postpartum are risk factors for infant colic and sleep disturbances. *L. reuteri* DSM17938 (Lr) reduced crying time in colicky infants, whereas *B. longum* ATCC BAA-999 (Bl) decreased anxiety behaviour in animal models. We aimed at studying the therapeutic effect of both probiotics in an animal model of prenatal restraint stress (PRS), known to display sleep disturbances.

Methods: Pregnant Sprague Dawley rats were submitted to 45 min restraint stress, under a bright light, three times per day. PRS adult male offspring were implanted with chronic electrodes and let recover for 15 days. Then animals received a daily gavage of Lr, Bl or placebo (P) during 14 days, prior to 24h polygraphic recording. A group of males without PRS received placebo and was used as reference (C).

Results: Wake state duration over 24h was similar among all groups. By contrast, REM sleep duration was longer in P than in C animals while NREM sleep duration was shorter. REM and NREM duration was restored to values close to reference with both probiotic treatments. P animals displayed more sleep fragmentation than C animals, with increased number of wake, REM and NREM episodes. These parameters were also normalized with both probiotic treatments.

Conclusions: *L. reuteri* DSM17938 and *B. longum* ATCC BAA-999 restored sleep architecture and normalized sleep fragmentation in prenatal stress animals. These probiotics may be of potential benefit in the management of sleep disorders, in particular those associated to perinatal stress.