TITLE: EVALUATION OF A NEW PROBIOTIC IN BEHAVIORAL DISORDERS

AUTHORS: OLIVEIRA, M.S.J. [1]; SOUZA, K. M. O. L. [1]; FARIAS, F. M. [1]; MORGADO, P.G.M. [1]; BOMGIOVANNI, G.L. [1]; CLARKE, J. [1]; MIGUEL, M. A. L. [1]; LOBO, L. A. [1]; MIRANDA, K. R. [2]; DOMINGUES, R. M. C. P. [1]

INSTITUTION: 1. UNIVERSIDADE FEDERAL DO RIO DE JANEIRO, RIO DE JANEIRO, RJ (AV. CARLOS CHAGAS FILHO, 373, CEP 21941-590, CIDADE UNIVERSITÁRIA, RIO DE JANEIRO - RJ, BRAZIL); 2. UNIVERSIDADE FEDERAL DO RIO DE JANEIRO/ CAMPUS MACAÉ, MACAÉ, RJ (AV. ALUIZIO DA SILVA GOMES, 50, CEP 27930-560, CIDADE UNIVERSITÁRIA, MACAÉ - RJ, BRAZIL)

ABSTRACT:

Probiotics are living organisms that when ingested in adequate amounts, promote benefits to the individual, such as immunomodulation, protection against infections, vitamin production and neuromodulation. The ingestion of these microorganisms may also be able to interfere in the physiology of the gut-brain axis, with the production of peptides and hormones like serotonin, and attenuate the symptoms of anxiety and depression. *Lactobacillus*, *Bifidobacterium*, *Lactococcus* and *Enterococcus* are genera of probiotics widely used in commercial products and some are also found in kefir. Kefir is difficult to standardize for manufacturing on an industrial scale, so using isolated strains would take advantage of its technological potential in a more controlled product. Spray Drying is a method for freeze drying cultures largely used and preferred by industry because it is cheaper and faster. The aim of this study was to evaluate the efficiency of a new mix of probiotics made with bacteria isolated from kefir and *Enterococcus* in the prevention of neurological disorders. *Lactococcus lactis* and *Lactobacillus casei* isolated from kefir and *Enterococcus faecium* E86 were reactivated on MRS agar at 37°C for 24h and inoculated in MRS broth at 37°C overnight, to obtain the supernatant that was subsequently centrifuged, and analyzed by H^1 Nuclear Magnetic Resonance 500 MHz (Bruker) to search for neuromodulators molecules. To test the antagonism, species from gut microbiota such as, *Clostridium citroniae*, *Clostridium scindens*, *Bacteroides fragilis, Fusobacterium nucleatum*, *Bifidobacterium dentium,* and pathogens such as *C. difficile* strains R20291 and 630 were grown on BHI agar. A volume of 100 µL of each strain, adjusted to 0.5 MacFarland scale, was inoculated on BHI agar plates and blood agar supplemented with hemin and menadione in confluent. Then, spots of 10 µl of the *E. faecium* E86, *L. lactis*, *L. casei* and *C. citroniae* cultures were inoculated. Only *C. difficile* R20291 and *C. difficile* 630 were inhibited by *E. faecium* E86 and *Lac. lactis*. The next steps will be the preparation of the microencapsulated probiotic bacteria *L. lactis*, *L. casei* and *E. faecium* E86 to 10^9 CFU. Then, it will be performed a pretreatment with the new probiotic compound in male Swiss mice and evaluated the protection against anxiety and depression with behavioral tests after the injection i.p. of lipopolysaccharide (LPS; 0,75 mg/kg). The changes in the microbiota will be accessed by RT-PCR.

Keywords: Probiotic, Spray Drying, Depression, Anxiety, Antagonism

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