

**TITLE:** THE EFFICACY OF EXTRACELLULAR METABOLITES OF *LACTOCOCCUS LACTIS* IN INHIBITING THE GROWTH OF *PROTEUS SPP.* BACTERIA ISOLATED FROM PATIENTS WITH HOSPITAL INFECTION.

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**ABSTRACT:**

The intestinal microbiota consists of the set of microorganisms resident in the human intestine, which is responsible for performing various functions that are essential to homeostasis maintenance. Among its functions, its role of antagonizing potentially pathogenic bacteria stands out in order to protect the host from several serious diseases. Most hospital infections (HI) are caused by an imbalance of symbiosis between the human microbiota and the host's immune system. Likewise, the *Proteus* bacteria are important etiological agents that already have reports of multi-resistance to antibiotics. As a result, the necessity to seek new therapeutic approaches arises. The administration of probiotics, such as *Lactococcus lactis*, is indicated as a therapeutic potential, mainly due to its anti-inflammatory activity in addition to its survival capacity to the gastrointestinal tract and the capacity of producing metabolites that lead to the modulation of the host's immune response. This study aimed to evaluate the efficacy of extracellular metabolites of *L. lactis* in inhibiting the growth of *Proteus spp.* bacteria isolated from patients with hospital infection was evaluated. The extracellular total metabolites (without dilution) of *L. lactis* were used for analysis of the antimicrobial activity in 26 strains of *Proteus spp.* isolated from patients in the Hospital de Clínicas de Itajubá in the period of 2001 to 2007, by the microdilution in plate. From 26 samples, 24 were of *P. mirabilis* and 2 were of *P. vulgaris*, obtained from different sites (urine, surgical site, skin and others). The reading of the plates of *Proteus spp.*, showed that 34.61% (9 strains) had the growth inhibited by *L. lactis* metabolites. Of these strains with inhibition in growth, 88.89% were *P. mirabilis* and resistant to several antibiotics, such as norfloxacin, cephalexin and sulfamethoxazole/trimethoprim, based on sensitivity/resistance tests. The average age of patients with inhibited growth was 42.14 years. It was concluded that crude metabolites of *L. lactis* present potential antimicrobial activity *in vitro*, requiring additional studies

for purification and identification of bioactive substances, as well as the enlargement of samples of pathogenic strains evaluated.

**KEYWORDS:** *Proteus*, Antimicrobials, Hospital Infection, Probiotics.

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