

**TITLE:** MOLECULAR CHARACTERIZATION OF *Streptococcus agalactiae* RESISTANT TO ERYTHROMYCIN AND LEVOFLOXACIN

**AUTHORS:** LUIZ, F.B.O.; SCHUAB, R.B.B.; SOUZA, A.F.; BARROS, R.R.

**INSTITUTION:** UFF - UNIVERSIDADE FEDERAL FLUMINENSE (RUA HERNANI DE MELO 101, CENTRO, 24210-130, NITERÓI, RJ)

**ABSTRACT:**

*Streptococcus agalactiae* (Group B Streptococci – GBS), a member of genital and gastrointestinal tracts microbiota, is the main agent of infections in newborns and also associated with infections in adults with some morbidity. Its major virulence factor is the capsule, with antiphagocytic activity. This molecule is also an epidemiological marker, and 10 different types are known (Ia, Ib, II-IX). Penicillin is the first choice for prophylaxis and treatment of GBS infections, whereas macrolides, lincosamides and fluoroquinolones are important alternatives for patients allergic to penicillin, however, the increased resistance to these antimicrobials has been reported in several regions. In the course of our studies, 59 isolates resistant to macrolides and fluoroquinolones were detected among 499 submitted to antimicrobial susceptibility test by agar diffusion. These isolates were submitted to: determination of erythromycin and levofloxacin minimum inhibitory concentration (MIC) and macrolide resistance phenotype and genotype, fluoroquinolone resistance molecular characterization, capsular typing and evaluation of genetic diversity by PFGE. Eleven of 12 erythromycin intermediate isolates showed MIC>1 µg/ml. Thus, 55 isolates were resistant to this agent and one was intermediate. The following resistance phenotypes and genotypes were found: M and *mefA/E* (9), cMLS<sub>B</sub> (20) with *ermA* (5), *ermB* (15); iMLS<sub>B</sub> (27) with *ermA* (24), *ermA/ermB* (1), *ermA/mefA/E* (1) and *ermB* (1). The predominant capsular type was V (30) followed by Ia (10) and III (9). Four isolates resistant to levofloxacin presented MICs ranging from 4 to >32 µg/ml, thus, one isolate was intermediate and three resistant. By deduction of the nucleotide sequences of the *gyrA* and *parC* genes, the resistant and intermediate isolates showed mutations at Ser-81→Leu in DNA gyrase. In Topoisomerase IV, Ser-79→Phe was observed in resistant isolates, whereas in the intermediate isolate Ser-80→Pro was detected. Capsular types Ia (2), III and V were found. Characterization of three of these isolates was previously published. In all, 38 DNA restriction profiles were observed among 50 analyzed isolates. Thirty-two isolates were allocated in 10 clonal groups. Most of the groups were composed of isolates of the same capsular type. The characterization of the isolates is important to understand the spread of antimicrobial resistance in order to improve strategies for the treatment of GBS infections.

**Keywords:** *Streptococcus agalactiae*, antimicrobial resistance, genetic diversity

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