Mutations in *gyrA* and susceptibility profile to ciprofloxacin in *Mycobacterium fortuitum* and *Mycobacterium abscessus* complex

Carneiro, M.S. [1], Nunes, L.S. [2,4], Ribeiro, M.O. [3], David, S.M. [3], Barth, A.L. [1,4]

[1] PPGCF - Programa de Pós Graduação em Ciências Farmacêuticas – UFRGS (Av. Ipiranga, 2752, Porto Alegre – RS), [2] UNISC - Universidade de Santa Cruz do Sul (Av. Independência, 2293, Santa Cruz do Sul – RS), [3] IPB-LACEN/RS - Laboratório Central do Estado (Av. Ipiranga, 5.40, Porto Alegre – RS), [4] HCPA - Serviço de Patologia Clínica (Ramiro Barcelos, 2350, Porto Alegre – RS)

Infections due to the Rapidly Growing Mycobacteria are difficult to treat because these mycobacteria are intrinsically resistant not only to the classical anti-tuberculous drugs, but also to the most active antibiotics currently available. Fluoroquinolone have been increasingly used for the treatment of infections caused by Rapidly Growing Mycobacteria, however, there are concerns that mutations in *gyrA* gene compromise the efficacy of the treatment. Therefore, antimicrobial susceptibility reports and associated mutations can be used to support the appropriate regimens for the treatment of Rapidly Growing Mycobacteria. Due to this, the aim of this study was to evaluate the susceptibility profile against ciprofloxacin and investigate possible mutations in *gyrA* gene in twelve isolates of Rapidly Growing Mycobacteria identified as seven isolates of *M. abscessus*, one isolate of *M. abscessus* subsp. *bolletii* and four isolates of *M. fortuitum* from Rio Grande do Sul Brazil. The susceptibility profile against ciprofloxacin was assessed by broth microdilution according to CLSI (2011). The isolate of *M. abscessus* subsp. *bolletii* was resistant whereas all isolates of M. *fortuitum* were susceptible to ciprofloxacin. Among *M. abscessus* all isolates were resistant to the ciprofloxacin. All Rapidly Growing Mycobacteria, regardless the species, resistant to ciprofloxacin presented a Alanine at position 83 (Ala-83) when GyrA peptide sequence was analyzed, in contrast to a Serine (Ser-83) which was found in all susceptible isolates. In conclusion, our results showed that for *M. fortuitum* the Ser-83 in the peptide GyrA are not enough to confer fluoroquinolone resistance. On the other hand, mutations at amino acid Ala-83 of GyrA are directly related to resistance to ciprofloxacin in M. *abscessus*.

Palavras chaves: *gyrA*, ciprofloxacin resistance, Rapidly Growing Mycobacteria

Agencia de fomento: CNPq