

## **IN VITRO ANTIOXIDANT AND ANTIBACTERIAL ACTIVITIES OF *GOSSYPIUM HIRSUTUM* L. (MALVACEAE)**

Celeida-Santos, B.S.<sup>1</sup>, Pires, A.S.<sup>2</sup>, Mayorga, O.A.S.<sup>1</sup>, Fernandes, L.S.<sup>2</sup>, Del-Vechio Vieira, G.<sup>3</sup>, Sousa, O.V.<sup>1;4</sup>, Alves, M.S.<sup>1;4</sup>

<sup>1</sup> Graduate Program in Pharmaceutical Sciences, Universidade Federal de Juiz de Fora (Rua José Lourenço Kelmer, s/n, Campus Universitário, São Pedro, CEP 36036-330, Juiz de Fora, Minas Gerais, Brazil), <sup>2</sup> Pharmacy Course, Faculty of Pharmacy, Universidade Federal de Juiz de Fora (Rua José Lourenço Kelmer, s/n, Campus Universitário, São Pedro, CEP 36036-330, Juiz de Fora, Minas Gerais, Brazil), <sup>3</sup> Natural Products Pharmacology Laboratory, Department of Pharmaceutical Sciences, Faculty of Pharmacy, Universidade Federal de Juiz de Fora (Rua José Lourenço Kelmer, s/n, Campus Universitário, São Pedro, CEP 36036-330, Juiz de Fora, Minas Gerais, Brazil), <sup>4</sup> Faculty of Pharmacy, Department of Pharmaceutical Sciences, Universidade Federal de Juiz de Fora (Rua José Lourenço Kelmer, s/n, Campus Universitário, São Pedro, CEP 36036-330, Juiz de Fora, Minas Gerais, Brazil)

*Gossypium hirsutum* L. (Malvaceae), popularly known as cotton, is traditionally used in the treatment of inflammation, healing, infection and bleeding. The current study aimed to determine the total phenols and flavonoids contents, and the antioxidant and antibacterial activities of ethanolic extract (EE) and hexane (HF), dichloromethane (DF), ethyl acetate (AF) and butanol (BF) fractions obtained from *G. hirsutum* leaves. The total phenols and flavonoids contents were determined by spectrophotometry using the calibration curves of gallic acid and rutin, respectively. The antioxidant activity was determined by 2, 2-diphenyl-1-picrylhydrazyl (DPPH) and ferric reducing antioxidant power (FRAP) methods. Antibacterial activity was established by the determination of the Minimal Inhibitory Concentration (MIC) using the microdilution method according the Clinical Laboratory Standards Institute (CLSI) guidelines followed by the Minimal Bactericidal Concentration (MBC), classifying the pharmacological effect as bacteriostatic or bactericidal. *Staphylococcus aureus* subsp. *aureus* (ATCC<sup>®</sup>6538<sup>™</sup>), *Escherichia coli* (ATCC<sup>®</sup>25922<sup>™</sup>), *Salmonella enterica* subsp *enterica* serovar Choleraesuis (ATCC<sup>®</sup>10708<sup>™</sup>) and *Pseudomonas aeruginosa* (ATCC<sup>®</sup>27853<sup>™</sup>) were used as reference bacterial strains. The total phenolic and flavonoids contents varied from 1.86 to 26.49 and 0.67 to 7.17 g/100g, respectively. The half maximal effective concentration (EC<sub>50</sub>) on DPPH and FRAP assays varied from 24.99 to 215.48 and 25.61 to 166.20 µg/mL, in this order. EE (bacteriostatic), HF (bacteriostatic) and AF (bactericidal) were active against *S. aureus* (ATCC<sup>®</sup>6538<sup>™</sup>) with MIC of 5, 2.5 and 5 mg/mL, respectively. AF (bacteriostatic) and BF (bacteriostatic) were active against *S. Choleraesuis* (ATCC<sup>®</sup>10708<sup>™</sup>) with MIC of 5. mg/mL for both samples. DF and AF produced MIC of 5 mg/mL against *E. coli* (ATCC<sup>®</sup>25922<sup>™</sup>) with bacteriostatic effect. AF (bacteriostatic) was active against *P.aeruginosa* (ATCC<sup>®</sup>27853<sup>™</sup>), with of MIC of 5 mg/mL. These results suggest that *G. hirsutum* is an interesting source of active constituents for the search of new therapeutic approaches.

Keywords: *Gossypium hirsutum*. Malvaceae. Antioxidants. Anti-Bacterial Agents. Plants, Medicinal.

Acknowledgments: UFJF, FAPEMIG, CNPq, CAPES.