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## Identification of pepper (*Capsicum annuum* L.) bioactive compounds by HPLC-DAD-ESI/APCI-MS and the evaluation of their antimicrobial activity and possible mode of interaction

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The present study was aimed to investigate the polyphenol and capsaicinoid compounds in pepper *Capsicum annuum* L. and the evaluation of their antimicrobial activity. A total of 18 compounds were identified and quantified by HPLC-DAD-ESI-MS, of which five were reported for the first time in the sample tested. Five capsaicinoids were identified and quantified in fresh and dried tissues by HPLC-DAD-APCI-MS. Antimicrobial activity of pepper polyphenols and capsaicinoids (Coumarin, caffeic acid, narangin, kaempferol, rutin, quercetin, capsaicin and dihydrocapsaicin) against 13 pathogen bacteria and three beneficial strains was studied using the disc diffusion and microdilution methods. In general, phenolic compounds had the most important activity with the highest inhibition zones obtained with caffeic acid (3.5 to 20.5 mm), quercetin (4.75 to 13.5 mm) and kaempferol (7 to 14 mm). In the determination of the minimal inhibitory concentrations, the effect of both quercetin and kaempferol was more important than caffeic acid. The interaction between these three polyphenols was studied against *Staphylococcus aureus* ATCC 6538 and *Pseudomonas aeruginosa* ATCC 27853. Different mode of interaction was observed (synergism, additive, and indifferent), but no antagonism was obtained. The best combination was quercetin and caffeic acid for *Staphylococcus aureus* with fractional inhibitory concentration index (FICI) of 0.37, and kaempferol with quercetin for *Pseudomonas aeruginosa* (FICI= 0.31).

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