

Application of methyl fatty hydroxamic acids based on *Jatropha curcas* seed oil and their metal complexes as anti microbial agents

ABSTRACT

Hydroxamic acids, fatty hydroxamic acids and their metal complexes are known as compounds that have biological activity. They have been investigated as antimicrobial compounds and were applied as antibacterial and antifungal agents in pharmacy and pharmaceutical compounds. In this research, the methyl fatty hydroxamic acids (MFHAs) based on *Jatropha curcas* seed oil and their metal complexes include the copper (II) methyl fatty hydroxamate (Cu-MFHs) and iron (III) methyl fatty hydroxamate (Fe-MFHs) were prepared and applied as anti microbial agents against the *Escherichia coli* (*E. coli*), *Proteus vulgaris* (*P. vulgaris*) and *Proteus mirabilis* (*P. mirabilis*) as gramnegative bacteria; methicillin-resistant *Staphylococcus aureus* (MRSA) and *Staphylococcus epidermidis* (*S. epidermidis*) as gram-positive bacteria ; *Candida parapsilosis* (*C. parapsilosis*) and *Candida Albicans* (*C. Albicans*) as yeast family of fungi. The results showed that the antimicrobial activity of MFHAs, Cu-MFHs and Fe-MFHs increase while their amounts increase. Also metal complexation of MFHAs caused the anti microbial activity arise and this activity is higher for complexation by Cu(II) compared to that of Fe(III). Comparing antimicrobial activity of MFHAs, Cu-MFHs and Fe-MFHs based on *Jatropha curcas* seed oil with several antibiotic drugs such as ampicillin, chloramphenicol, gentamicin streptomycin, tetracycline and nystatin against the mentioned microbial showed that the Cu-MFHs and Fe-MFHs have very strong antimicrobial activity.

Keyword: Antimicrobial agent; Methyl fatty hydroxamic acids; Copper methyl fatty hydroxamate; Iron (III) methyl fatty hydroxamate; *Jatropha curcas* seed oil