

## GC-MS Analysis of Fatty Acid Esters in Fixed Oil, Isolated from *Thymus linearis* and Evaluation of their Antibacterial Activity

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**SUMMARY.** Objective of the study was to analyze the fixed oil obtained from *Thymus linearis* and evaluation of its anti bacterial activity. The fixed oil composition isolated from *T. linearis* n-hexane fraction has been analyzed using gas chromatography-mass spectrometry (GC-MS) technique. The antibacterial activity of fixed oil was determined by agar well diffusion method against two Gram positive and six Gram negative bacterial strains. Ciprofloxacin was used as control in antibacterial study. Phytochemical investigations show that *T. linearis* contains medicinally important essential oils, alkaloids, resins, glycoside and triterpenoids. The total percentage of saturated fatty acids was found to be 64.7%. These were identified as myristic acid (3.0%), pentadecanoic acid (0.7%), palmitic acid (49.0%), margaric acid (1.0%), stearic acid (8.3%), behenic acid (0.3%), tricosanoic acid (0.3%) and tetracosanoic acid (2.1%). The unsaturated fatty acids were characterized as heptadecenoic acid (5.4%), oleic acid (9.2%), eicosanoic acid (2.6%), erucic acid (0.1%), linoleic acid (11.7%), octadecenoic acid (0.2%) and linolenic acid (6.0%), respectively. Fixed oil showed significant activity against *K. pneumoniae*, *P. aeruginosa*, *Y. enterocolitis*, *S. paratyphi*, *S. typhi* and *C. freundii* as compared to ciprofloxacin used as standard.

**RESUMEN.** El objetivo del estudio fue analizar el aceite fijo obtenido de *Thymus linearis* y evaluar su actividad antibacteriana. La composición de aceite fija aislada de la fracción de n-hexano de *T. linearis* se ha analizado utilizando la técnica de cromatografía de gases-espectrometría de masas (GC-MS). La actividad antibacteriana del aceite fijo se determinó mediante el método de difusión de pozos de agar contra dos cepas bacterianas Gram positivas y seis Gram negativas. La ciprofloxacina se usó como control en el estudio antibacteriano. Las investigaciones fitoquímicas muestran que *T. linearis* contiene aceites esenciales, alcaloides, resinas, glucósidos y triterpenoides de importancia medicinal. Se encontró que el porcentaje total de ácidos grasos saturados era del 64,7%. Estos se identificaron como ácido mirístico (3.0%), ácido pentadecanoico (0.7%), ácido palmítico (49.0%), ácido margárico (1.0%), ácido esteárico (8.3%), ácido behénico (0.3%), ácido tricosanoico (0.3 %) y ácido tetracosanoico (2.1%). Los ácidos grasos insaturados se caracterizaron como ácido heptadecenoico (5.4%), ácido oleico (9.2%), ácido eicosanoico (2.6%), ácido erúcico (0.1%), ácido linoleico (11.7%), ácido octadecenoico (0.2%) y ácido linoléico (6.0%), respectivamente. El aceite fijo mostró una actividad significativa contra *K. pneumoniae*, *P. aeruginosa*, *Y. enterocolitis*, *S. paratyphi*, *S. typhi* y *C. freundii* en comparación con la ciprofloxacina utilizada como estándar.

**KEY WORDS:** antibacterial activity, fatty esters, GC-MS, *Thymus linearis*.

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