

UNIVERSIDAD INCA GARCILASO DE LA VEGA

NUEVOS TIEMPOS, NUEVAS IDEAS



FACULTAD DE CIENCIAS FARMACÉUTICAS Y BIOQUÍMICA

**ACTIVIDAD ANTIBACTERIANA IN VITRO DEL EXTRACTO
HIDROALCÓHOLICO DEL FRUTO DE *CAESALPINIA SPINOSA* (TARA) EN
CEPAS DE *PSEUDOMONAS AERUGINOSA ATCC 9027***

Tesis para optar al título profesional de químico farmacéutico y
bioquímico

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RESUMEN

El presente estudio tipo experimental, de diseño cuasi experimental, ha sido realizado con el fin de estimar la eficiencia antibacteriana in vitro del extracto hidroalcohólico de Tara (*Caesalpinia spinosa*) como sustancia natural, en comparación con Ceftazidima sobre cepas de *Pseudomonas aeruginosa* (ATCC 9027). El método experimental in vitro se efectuó usando 25 placas con agar Müller Hilton, para un tamaño de muestra de 80 mediciones de halos de inhibición; para hacer la siembra microbiológica se utilizó el método de difusión en placa ó (Kirby-Bauer), en 4 grupos de investigación; se usó el extracto hidroalcohólico de tara (*Caesalpinia spinosa*) en concentraciones distintas, al 100 %, 80%, 60% y 40%, usando Ceftazidima (control positivo) y agua destilada (control negativo), la evaluación fue pasada las 24 horas en la estufa a 37°C, midiendo los halos de inhibición en mm.

The results obtained in the investigation were processed through the MINITAB 19 statistical program, through the analysis of variance analysis (ANOVA) and the Bonferroni Confidence Intervals test, works with a 95% confidence level. Obtaining as results that the antibacterial activity against strains of *Pseudomonas aeruginosa* (ATCC9027) is greater as the concentration of the natural sample increases, thus being the 100% sample, presented a 27 mm inhibition halo, at the concentration at 80% with a 27mm halo of inhibition, while at 60% and 40% concentrations the inhibition halo was 26mm and 18mm respectively. In conclusion, the essence of *Caesalpinia spinosa* (Tara) has an antibacterial effect against *Pseudomonas aeruginosa*.

Palabras clave: extracto de *Caesalpinia spinosa* (Tara); metabolitos secundarios; efecto antibacteriano; *Pseudomonas aeruginosa*; ceftazidima.

ABSTRACT

The present experimental study, of quasi-experimental design, has been carried out in order to estimate the in vitro antimicrobial efficiency of the hydroalcoholic extract of Tara (*Caesalpinia spinosa*) as a natural substance, in comparison with Ceftazidime on strains of *Pseudomonas aeruginosa* (ATCC 9027). The in vitro experimental method was carried out using 25 plates with Müller Hilton agar, for a sample size of 80 measurements of inhibition halos; To make microbiological planting, the plate diffusion method (Kirby-Bauer) was used in 4 research groups; the hydroalcoholic extract of Tara (*Caesalpinia spinosa*) was used in different concentrations, at 100%, 80%, 60% and 40%, using ceftazidime (positive control) and distilled water (negative control), the evaluation was after 24 hours in the stove at 37 °C, measuring the halos inhibition in mm.

The results obtained in the investigation were processed through the statistical program MINITAB 19, through the analysis of variance tests (ANOVA) and the Bonferroni confidence intervals test, at a confidence level of 95%. The results obtained show us that the antibacterial activity against strains of *Pseudomonas Aeruginosa* (ATCC9027) is greater as the concentration of the natural sample is increased, being that the sample of 100%, made a halo of inhibition of 27 mm, followed by 80% concentration with a 27mm inhibition halo. In conclusion, the essence of *Caesalpinia Spinosa* (Tara) has an antibacterial effect against *Pseudomonas aeruginosa*.

Keywords: Extract of *Caesalpinia spinosa* (Tara); secondary metabolites; antibacterial effect; *Pseudomonas aeruginosa*; ceftazidime.