



ANTIMICROBIAL ACTIVITY OF CASHEW APPLE EXTRACTS (*Anacardium occidentale L.*) GROWN IN THE STATE OF CAMPECHE

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Introduction. Campeche is the largest producer of cashew with 3688.5 tonnes in 2010 (1). This fruit is formed by India walnut and cashew apple that has minimal industrial use, although there are few studies on cashew, it has been demonstrated a wealth of polyphenolic compounds, which have important biological activities (2). Therefore the aim of this work was to study the antimicrobial activity of polyphenolic extracts of fresh cashew apple.

Methods. The extraction of polyphenols was performed with organic solvents in peel, pulp and complete cashew apple fruit. All the extracts were analyzed for total polyphenol content (TPC) by the spectrophotometric method of *Folin-Ciocalteu* (3), the screening of antimicrobial activity was performed against *Escherichia coli*, *Pseudomonas aureginosa*, *Salmonella typhimimum*, *Staphylococcus aureus*, *Enterococcus fecalis* and *Bacillus subtilis* using the agar diffusion and liquid medium techniques (4), the extracts that showed activity were evaluated for the determination of the minimum inhibitory concentration (MIC) (4).

Results. The highest and lowest polyphenol content with 136.2mg and 26.99 mg/g DW (g fruit dry basis), were founded in the peel and pulp extracts, respectively (Table 1).

Table 1. Total polyphenols content (TPC) and minimum inhibitory concentration (MIC) of the cashew extracts.

Cashew Apple Extract	TPC(mg of gálic Ac./g DW)	M.O.	MIC50 µg/mL	MIC 90µg/mL	MIC 99µg/mL
Complete	72.80	<i>E.f</i>	3.8	9.6	43.6
		<i>B.s</i>	14	22	40
Peel	136.22	<i>E.f</i>	3.8	18	43
		<i>B.s</i>	1.3	7	43
Pulp	26.99	<i>E.f</i>	4	12.2	23
		<i>B.s</i>	14	21	22

M.O.: Microorganism, *E.f.*: *Enterococcus fecalis* *B.s.*: *Bacillus subtilis*

Antibacterial activity was observed on *E. fecalis* and *B. Subtillis*. The MIC with these strains was determined and the pulp extract showed the lowest MIC99 value for both of them (Table 1). Figure 1 shows the reduction of colony formation units and the increase of inhibition related to the polyphenols concentration.

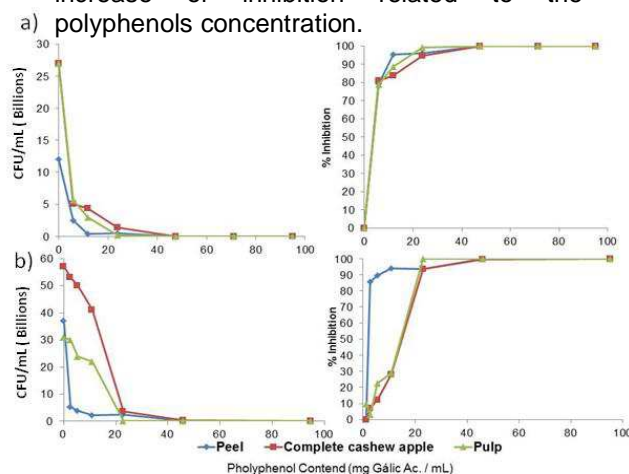


Figure 1. Growth reduction and inhibition of a) *E. fecalis* and b) *B. subtilis* in the different cashew extracts evaluated.

Conclusions. The cashew peel showed the higher content of polyphenol. Among the strains evaluated, antimicrobial activity was observed against *E.fecalis* and *B.subtillis*, 44 µg/mL of any extract is necessary to inhibit 99% of these bacterias.

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References

- Rickson, F. (1998). *AM J of BOT* 85, (6): 835–849.
- Vit, P. (2003). *Revista de la facultad de farmacia*, 45, (1): 77-79.
- Vasco, C., Ruales, J., Kamal-Eldin, Ar. (2008) *Food Chemistry*, 111, 816-823.
- Wayne. (1993). NCCLS document M2-A5. pp. 28