EVALUATION OF LIGNOCELLULOLYTIC ACTIVITY IN FUNGI ISOLATED FROM THE FRUIT OF *Opuntia joconostle* COLLECTED IN THE REGION OF "ATOTONILCO EL GRANDE", HIDALGO.

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Introduction. Lignocellulolytic fungi play an important role in the environment as well as in the industry due to their ability to complex biopolymer degradation, which leads to their complete mineralization, up to 70% in CO_2 and H_2O. The ligninolytic activity has been named as an enzymatic combustion, because it is nonspecific enzyme system, and extracellular oxidative nature. This system includes several types of enzymes high redox potential (manganese peroxidase and laccase with phenol oxidase activity and oxidases). As well as cellulases and xylanases with capacity hydrolytic, which can have multiple biotechnological applications in the industry.[1]
The vast majority of these fungi have been isolated from wood and bark, natural source of lignin, the second most abundant biopolymer after cellulose. However, there are other natural sources not woody that can be source of fungi with ligninolytic activity, as in the case of the fruit of *Opuntia joconostle*, better known in Mexico as xoconostle, this fruit containing in the pericarp phenolic compounds that help protect the fruit against damage from ultraviolet light, and acts as a defense against phytopathogenic microorganisms.[2]

Methodology. Samples of fruit *O. joconostle* were collected in "Atotonilco el Grande". The determination of total phenolic compounds (TPC) in the pericarp xoconostle was made by the Folin-Ciocalteu method.[2]
Isolation of fungi from the pericarp of the fruit of *O. joconostle* was performed by using PDA medium with antibiotic (ampicillim 100 µg/ mL and chloramphenicol 200 µg/ml). The enzymatic activity laccase, manganese peroxidase (MnP), xylanase and cellulose was evaluated with medium Kirk modified by using ABTS, phenol red, xylan from beechwood and carboxymethylcellulose substrates for each activity respectively.[3]

Results. TPC Content determined in the pericarp xoconostle was of 0.82 ± 0.071 mg/g fresh pericarp. During Isolation was achieved of 11 fungal strains from xoconostle pericarp, the test of enzymatic activities showed that 9 strains had laccase activity, 4 had MnP activity, 9 had activity xylanase and 8 had cellulase activity, which were determined in days than showed the maximum potential index (P.I), this data are show in the tables 1 and 2.

Table 1. Determination of potential index (P.I.) laccase and MnP activity.

Strains	Laccase activity		MnP activity	
	IP	Día	IP	Día
MXA 3	1	5	1	1
MXA 4	*		1.5	2
MXA 11	1.36	2	1.25	3
MXA 13	1.25	2	*	
MXA 14	1	5	*	
MXA 17	1.7	2	*	
MXA 18	1.3	3	*	
MXA 23	1.25	1	*	
MXA 25	1	1	*	

* Don´t show activity.

Table 2. Determination of potential index (P.I.) xylanase and cellulase activity.

Strains	Xylanase activity		Cellulose activity	
	IP	Día	IP	Día
MXA 4	1.40	5	1.60	5
MXA 11	1.14	5	1.14	5
MXA 13	1.10	5	1.16	5
MXA 14	1.10	5	1.12	5
MXA 15	1.10	5	0.00	
MXA 17	1.05	5	1.17	5
MXA 18	1.12	5	1.16	5
MXA 23	*		1.13	5
MXA 24	1.11	5	*	
MXA 25	*		1.16	5

* Don´t show activity.

Conclusions. Was obtained 0.82 ± 0.071 mg of TPC / g xoconostle fresh pericarp, 11 fungi strains were isolated from the fruit of *O.joconostle,* which were evaluated to determine its activity and lignocellulolytic.

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