

P0559 Virulence genes associated with biofilm formation in clinical isolates of *Candida albicans*

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Background: The aim of this study was to evaluate the biofilm production (BP) and presence of virulence genes such as agglutinin-like sequence 1 and 3 (*ALS1* and *ALS3*), hyphal wall protein 1 (*HWP1*), 1,3-beta-glucan synthase (*FKS1*), GPI-anchored protein 10 (*PGA10*), biofilm and cell wall regulator 1 (*BCR1*), enhanced filamentous growth protein 1 (*EFG1*) in *C. albicans* causing invasive candidiasis.

Materials/methods: *C. albicans* (2004-2016) were evaluated for the presence of genes *ALS1*, *ALS3*, *HWP1*, *FKS1*, *PGA10*, *BCR1* and *EFG1* by multiplex PCR. All nucleotide sequences were taken from database GeneBank and aligned using the ClustalW program. BP among *C. albicans* was studied biochemically using the 2,3-bis(2-methoxy-4-nitro-5-sulfophenyl)-5-[(phenylamino)carbonyl]-2H-tetrazolium hydroxide (XTT; Sigma) reduction assay. *C. albicans* were classified as biofilm-forming having optical density (OD) > 0.1 and non-biofilm-forming with OD < 0.1.

Results: A total of 183 *C. albicans* (141 from blood culture, 42 from other sterile specimens) were evaluated. BP was observed for 51 (28%) *C. albicans*. There were no differences in BP among *C. albicans* isolated from blood culture and other sterile specimens (28% vs 28%). The genes were determined in all isolates of *C. albicans*. Genes *PGA10* and *EFG1* associated with biofilm-forming *C. albicans* compared to non-biofilm-forming isolates (90% vs 77%, 71% vs 46%, $p < 0.05$, respectively), table. The presence of other virulence genes was similar among biofilm-forming and non-biofilm-forming *C. albicans*.

Conclusions: The presence of virulence genes varied among biofilm-forming and non-biofilm-forming *C. albicans* causing invasive candidiasis. It can be supposed that genes *PGA10* (90%) and *EFG1* (71%) associated with production of biofilm in *C. albicans*.

Table. The presence of virulence genes in biofilm-forming (OD > 0.1) and non-biofilm-forming (OD < 0.1) *C. albicans* causing invasive candidiasis.

Virulence genes	<i>C. albicans</i> with	<i>p</i>	
	OD>0.1, <i>n</i> (%)	OD<0.1, <i>n</i> (%)	
<i>ALS3</i>	44(86)	119(90)	<i>p</i> =0.5
<i>HWP1</i>	31(61)	70(53)	<i>p</i> =0.3
<i>FKS1</i>	37(73)	107(81)	<i>p</i> =0.2
<i>PGA10</i>	46(90)	102(77)	<i>p</i>=0.04
<i>BCR1</i>	40(78)	96(73)	<i>p</i> =0.4
<i>EFG1</i>	36(71)	60(46)	<i>p</i>=0.002
<i>ALS1</i>	20(39)	55(42)	<i>p</i> =0.8
Total	51(28)	132(72)	

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