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Assessment of interleukin-17,interleukin- 22and interleukin-33 in relation to the clinical features and pathogenicity of oral candidiasis

A Thesis

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ABSTRACT

Background: Candidiasis is one of the most common disease of human caused by several species of *Candida* species, The yeast *Candida* is a normal habitant of the mucous membrane of oral cavity which switch to pathogenic microorganism in immunocompromised people. multiple virulence factors are contributing to enhance the infection in the host, Adherence to host tissues, switching from yeast to hyphae and exoenzymes secretion are important virulence factors of *Candida albicans* play important roles in pathogenicity of *Candida* infection.

Interleukin-33 is one of the alarming cytokines family that inform the immune system about any tissue injury, infection or necrosis. InterLeukin-33 is multifunctional cytokines that has anti-inflammatory (protective) or inflammatory effect on tissue in conjunction with T-Helper17.

Objective: The present study was conducted with an aim to determine in a comparative study phospholipase, proteinase, haemolysin, lipase activities and biofilm formation in oral Candidiasis isolated from diseased group and healthy group isolates, as well as study the effect of InterLeukin-33 on T-Helper17 cytokines InterLeukin-17 and InterLeukin-22 in saliva of patients with oropharyngeal candidiasis.**Subjects,Material and Methods:** Fifty two subjects(40 patient, 12 healthy) visiting Al-Yarmouk teaching hospital /Baghdad were included in this study having clinical features of oral candidiasis and after a positive confirmation of infection using smearing methods and swab culturing on chromagar media, saliva samples were collected from them between 8:00 and 12:00 am and centrifuged and stored at $-60\text{ }^{\circ}\text{C}$ until immunological analysis using Enzyme Linked Immunosorbent Assay kits.

Results: Immunological analysis of Interleukin-17 The highest concentration of cytokine found in patients with oral candidiasis with a median value of 440.4 ng/l (in patient group), while the lowest concentration were observed in control group with a median of 85.4 ng/l and there was significant difference between the two groups ($P < 0.001$). Interleukin-22 highest concentration of cytokine

found in patients with oral candidiasis with a median value of 429.9 ng/l (in patient group), while the lowest concentration were observed in control group with a median of 38.3 ng/l and there was significant difference between the two groups (P = 0.003).

Interleukin-33 The highest concentration of cytokine found in patients with oral candidiasis with a median value of 585.2 ng/l (in patient group), while the lowest concentration were observed in control group with a median of 227.2 ng/l and there was significant difference between the two groups (P = 0.001).

Microbiological analysis for enzymes activity has shown , Phospholipase activity was strong in 8.3% of healthy isolates and 25% of patients group, 40% of patients group isolates produced strong proteinase activity and 0% in healthy group, haemolysin activity was strong in 37.5% of patient group and 8.3% of healthy group .

lipase activity was weak to moderate in both group (patients and healthy), 35.7% of *Candida albicans* of patient group showed strong biofilm formation in comparison to healthy group 8.3% . **Conclusion:** Interleukin-33 is one of the alarming cytokines family that inform the immune system about any tissue injury, infection or necrosis. Interleukin-33 is multifunctional cytokines that has anti-inflammatory (protective) or inflammatory effect on tissue in conjunction with T-Helper17.

Candida albicans showed more extracellular hydrolytic enzyme activity more biofilm formation in patients group than control group, Both the *Candida albicans* in patients and control groups are capable of producing extracellular hydrolytic enzymes and biofilm formation and in hyphal form is more than the yeast form.