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Cytokine secretion by lung epithelial cells during infection with pathogenic fungi

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During an infection, host epithelial cells may interact with pathogens and in response; these cells secrete cytokines that promote recruitment of innate immune system cells to the site of infection. *Paracoccidioides brasiliensis* and *Histoplasma capsulatum* are two dimorphic fungi that cause systemic mycoses in humans. Our group has been demonstrating that both species induce secretion of IL-6 and IL-8 in the human lung epithelial cell line A549. It was also observed that *P. brasiliensis* yeasts promote activation of the kinases PKC δ , p38 MAPK and ERK1/2 in A549 cells. Moreover, by using specific inhibitors in *P. brasiliensis*-A549 cell cultures, we verified that the secretion of IL-6 and IL-8 is dependent on the activation of these kinases. Also, it was evaluated the role of integrins, receptors present in host cell surface, in cytokine secretion by A549 cells. First, we verified that yeasts of *P. brasiliensis* and *H. capsulatum* are able to associate with $\alpha 3$ and $\alpha 5$ integrins and then, these fungi promote clustering of these integrins into A549 cell membrane rafts. Finally, small interfering RNA approach directed to $\alpha 3$ and $\alpha 5$ integrins showed that these integrins participate in IL-6 and IL-8 secretion by *P. brasiliensis*-infected A549 cells. Together, these results elucidate some of the mechanisms by which pathogenic fungi promote cytokine secretion in epithelial cells.

Biography

Erika Suzuki de Toledo has completed her PhD from Universidade Federal de São Paulo, São Paulo, Brazil and Postdoctoral studies from Pacific Northwest Research Institute, Seattle, USA. She is an Adjunct Professor at Escola Paulista de Medicina, Universidade Federal de São Paulo, Brazil. She has published 29 scientific articles.

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