

**TITLE:** HUMAN DERMATOPHYTOSIS: C-TYPE LECTIN AND TOLL-LIKE RECEPTORS IN THE RECOGNITION OF *TRICHOPHYTON RUBRUM*

**AUTHORS:** CELESTRINO,G.A.; COSTA,A.A.; WEDY,G.F.; JUNIOR,W.B.; CRIADO,P.R.; BENARD,G.; SOUSA,M.G.T.

**INSTITUTION:** INSTITUTO DE MEDICINA TROPICAL DE SÃO PAULO – USP, LABORATÓRIO DE MICOLOGIA, LIM-53, FMUSP (Avenida Dr. Enéas Carvalho de Aguiar, 470 - CEP 05403-000, SÃO PAULO – SP, BRAZIL). Divisão de Clínica Dermatológica, Hospital das Clínicas – FMUSP (Avenida Dr. Enéas Carvalho de Aguiar, 255 – CEP 05403-010, SÃO PAULO-SP, BRAZIL) Faculdade de Medicina do ABC (Av. Lauro Gomes, 2000 – CEP 09060-870, SANTO ANDRÉ – SP BRAZIL)

**ABSTRACT:**

Dermatophytosis is a fungal infection characterized by involvement of keratinized tissues such as skin, hair and nails. They are caused by dermatophytes, which use keratin of these tissues as a source of nutrients. The main etiologic agent is *Trichophyton rubrum*, accounting for approximately 80% of the cases. Phagocytic cells, such as macrophages and neutrophils, constitute the first line of host defense during infection and are essential in protective antifungal immunity, recognizing fungal components through pattern recognition receptors (PRRs), such as *toll*-like receptors (TLR) and C-type lectin receptors (CLR). The loss or deficiency in the effector antimicrobial mechanisms of these cells may result in susceptibility to fungal infections. In this study, we analyzed the role of dectin-1, mincle, mannose or TLR2 expressed by healthy individuals' monocytes in the interaction with *T. rubrum* conidia. Our results show that phagocytosis of *T. rubrum* conidia by monocytes is associated with TLR-2 or mannose receptor, but it was not altered by the blockade of mincle or dectin-1 receptors with their respective monoclonal antibodies. In addition, the fungicidal activity of monocytes was impaired in the absence of these receptors (mincle, dectin-1, mannose or TLR2). Secretion of TNF- $\alpha$  by monocytes in the presence of *T. rubrum* conidia was reduced by the blockade of the receptors mincle, dectin-1, TLR2 or mannose. On the other hand, the IL1- $\beta$  secretion was impaired only by the blockade of the mannose receptor. In addition, secretion of IL-10 by monocytes in the presence of *T. rubrum* conidia was not influenced by the blockade of the mincle, dectin-1, TLR2 and mannose receptors. So far, our preliminary suggest that absence of signaling by the mannose receptor in human monocytes may impair the subsequent inflammatory response.

**Keywords:** innate immunity, C-type lectin receptor, Toll-like receptor, dermatophytosis, monocytes, *Trichophyton rubrum*

**Development Agency:** Fundação de Amparo à Pesquisa do Estado de São Paulo – FAPESP #2018/16146-8, #2016/16369-1