

## Research no.[6]

### Bacteriocin-Like Inhibitory Substances from Probiotics as Therapeutic Agents for Candida Vulvovaginitis

By

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#### **Abstract:**

Probiotics can potentially prevent and treat diseases. We examined the inhibitory activity of bacteriocin-like inhibitory substances (BLISs) from potentially probiotic lactobacilli and streptococci on *Candida albicans* and non-*Candida albicans* clinical isolates from women with vulvovaginitis. Using agar well diffusion assays, BLISs inhibited both *Candida albicans* and non-*Candida albicans* isolates. The BLIS from *L. pentosus* isolates had the highest anti-*Candida* activity (33/45; 73.3%), followed by BLISs from isolates of *L. paracasei subsp. paracasei* (31/45; 68.9%), *L. rhamnosus* I (30/45; 66.7%), *L. delbrueckii subsp. lactis* I (30/45; 66.7%), and *S. uberis* II (30/45; 66.7%). Upon characterization according to the retained activity under variable physical and chemical conditions, the BLISs showed stability against heat, pH, and surfactants, but were protease-sensitive, which suggests a proteinaceous nature of the active substances. Using crystal violet assays, the BLISs reduced the *Candida* biofilm biomass significantly as compared to a control group that lacked BLISs. In vivo testing of the antagonistic activity was performed using the *Galleria mellonella* (*G. mellonella*) larvae model. BLISs significantly improved survival in *G. mellonella* larvae treated with *Candida* isolates on the first, second, and seventh days, as compared to larvae inoculated with *Candida* only ( $p < 0.01$ ). The results show that BLISs can be used as biotherapeutic agents in vulvovaginal candidiasis.