

Abstract:

Bacterial and fungal catheter-related bloodstream infections (CRBSI) cause high fever and blindness due to fungal endophthalmitis. Candidal CRBSI have a particularly high mortality rate and needs attention. In this study, we examined the effect of biotin on the colonization and growth of *Candida albicans* in the lumen of the catheter used for nutrient infusions. In the current study, nutrient infusion-1: commercially available peripheral parenteral nutrition (PPN) infusion solution with vitamin B1 (control), nutrient infusion-2: biotin added to the PPN infusion, nutrient infusion-3: water-soluble vitamins (B2, B6, B12, C, folic acid, nicotinamide, panthenol) except biotin added to the PPN infusion, and nutrient infusion-4: commercially available PPN infusion with all water soluble vitamins (B1, B2, B6, B12, C, folic acid, nicotinamide, biotin, panthenol) were used. *Candida albicans* suspension was injected into a Planecta infusion set, which was connected to one of the test solutions, and the infusions flow pass was blocked for approximately 30 minutes. Subsequently, the infusions were resumed, and the test solution was collected at 24 hours, 48 hours, and 72 hours to estimate the *Candida albicans* colony-forming units in each infusion. We demonstrated that nutrient infusion with biotin promoted colonization and proliferation in the catheter lumen, whereas those without biotin had no effect. These results suggest that biotin may accelerate the colonization and growth of *Candida albicans* in catheter lumen and using biotin-containing nutrient infusions may increase the risk of CRBSI.

Reference:

Ohara H, Matsuzaki T, Ochiai T, Hayasaka M. Biotin Regulates Colonization and Growth of *Candida albicans* in the Catheter Lumen During Nutrient Infusions. *Int J Pharm Compd.* 2020;24(5):420-425.