

Abstract

The purpose of this study was to compare the cytotoxicity of three dentine bonding agents, one-step (G-Bond™ and Clearfil™ S3 Bond) and two-step (Clearfil™ SE Bond X), by agar overlay test. The number of 3×10^5 cells/ml of L929 in 10%D-MEM was seeded in 90 mm petri dish and incubated in $37 \pm 5^\circ\text{C}$ 5% CO_2 . After 24 hours, the monolayer cells reached confluency. Then, 3% of nutrient agar was poured on the monolayer cells in the petri dish and stained with 0.01% neutral red dye. Two microliter of each test material was dropped on the cellulose nitrate filter diameter 5 mm. and placed on the nutrient agar. For each test group, three samples along with one sample of the control group were tested. The same procedure was repeated 4 times. The cytotoxicity was graded according to the criteria of ISO 7405 after 24 hours of incubation period. It showed that the diffusions of Clearfil™ S3 Bond and G-Bond™ were in the same rate but Clearfil™ SE Bond X had a higher diffusion rate than the former two dentine bonding agents. Furthermore, there was no difference among three materials on the cellular lysis ($p > .05$). In conclusion, there is no difference among three bonding agents based on the cytotoxicity. However this technique is the primary screening for toxicity of biomaterials. Further cytotoxic investigation of material that contacts dentine in clinical practice by using Dentine Barrier Test is recommended.

Key words: agar overlay; cytotoxicity; dentine bonding agents