

**ÇEŞİTLİ ENDODONTİK
MATERYALLERİN KEMİK
İÇİ İMPLANTASYONU İLE
BİYOKOMPATİBİLİTELERİNİN
VE DOKU YANITLARININ
HİSTOPATOLOJİK OLARAK
ARAŞTIRILMASI**

Muzaffer Emir DİNÇOL



© Copyright 2024

Bu kitabın, basım, yayın ve satış hakları Akademisyen Kitabevi A.Ş.'ne aittir. Aınlan kuruluşun izni alınmadan kitabın tümü ya da bölümleri mekanik, elektronik, fotokopi, manyetik kağıt ve/veya başka yöntemlerle çoğaltılmamaz, basılmamaz, dağıtılmamaz. Tablo, şekil ve grafikler izin alınmadan, ticari amaçlı kullanılmamaz. Bu kitap T.C. Kültür Bakanlıđı bandrolü ile satılmaktadır.

"Bu Kitap, Prof. Dr. Raif ERİŐEN"nin danıőmanlıđında yürütölen Muzaffer Emir DİNÇOL'a ait "Çeőitli Endodontik Materyallerin Kemik İçi İmplantasyonu ile Biyokompatibilitelerinin ve Doku Yanıtlarının Histopatolojik Olarak Araőtırılması" adlı doktora tezinden üretilmiőtir.

ISBN 978-625-375-040-4	Yayın Koordinatörü Yasin DİLMEN
Kitap Adı Çeőitli Endodontik Materyallerin Kemik İçi İmplantasyonu İle Biyokompatibilitelerinin ve Doku Yanıtlarının Histopatolojik Olarak Araőtırılması	Sayfa ve Kapak Tasarımı Akademisyen Dizgi Ünitesi
Editör Raif ERİŐEN ORCID iD: 0000-0002-1146-6979	Yayıncı Sertifika No 47518
Yazar Muzaffer Emir DİNÇOL ORCID iD: 0000-0001-8258-8327	Baskı ve Cilt Vadi Matbaacılık
	Bisac Code MED016000
	DOI 10.37609/akya.3271

Kütüphane Kimlik Kartı
Dinçol, Muzaffer Emin.

Çeőitli Endodontik Materyallerin Kemik İçi İmplantasyonu İle Biyokompatibilitelerinin ve Doku Yanıtlarının Histopatolojik Olarak Araőtırılması / Muzaffer Emin Dinçol; ed. Raif Eriően.

Ankara : Akademisyen Yayınevi Kitabevi, 2024.
89 s. : tablo, grafik, resim. ; 135x210 mm.

Kaynakça var.
ISBN 9786253750404

UYARI

Bu üründe yer alan bilgiler sadece lisanslı tıbbi çalışanlar için kaynak olarak sunulmuőtur. Herhangi bir konuda profesyonel tıbbi danıőmanlık veya tıbbi tanı amacıyla kullanılmamalıdır. Akademisyen Kitabevi ve alıcı arasında herhangi bir şekilde doktor-hasta, terapist-hasta ve/veya başka bir sađlık sunum hizmeti iliőkisi oluőturmamaz. Bu ürün profesyonel tıbbi kararların eőleniđi veya yedeđi deđildir. Akademisyen Kitabevi ve bađlı őirketleri, yazarları, katılımcıları, partnerleri ve sponsorları ürün bilgilerine dayalı olarak yapılan bütün uygulamalardan dođan, insanlarda ve cihazlarda yaralanma ve/veya hasarlardan sorumlu deđildir.

İlaçların veya başka kimyasalların reçete edildiđi durumlarda, tavsiye edilen dozunu, ilacın uygulanacak süresi, yöntemi ve kontraendikasyonlarını belirlemek için, okuyucuya üretici tarafından her ilaca dair sunulan güncel ürün bilgisini kontrol etmesi tavsiye edilmektedir. Dozun ve hasta için en uygun tedavinin belirlenmesi, tedavi eden hekimin hastaya dair bilgi ve tecrübelerine dayanak oluőturmaması, hekimin kendi sorumluluđundadır.

Akademisyen Kitabevi, üçüncü bir taraf tarafından yapılan ürüne dair deđişiklikler, tekrar paketlemeler ve özelleőtirmelerden sorumlu deđildir.

GENEL DAĐITIM

Akademisyen Kitabevi A.Ő.

Halk Sokak 5 / A Yenıőehir / Ankara

Tel: 0312 431 16 33

siparis@akademisyen.com

www.akademisyen.com

ÖNSÖZ

Çalışmalarımnda bana her bakımdan destek olan, bilgi ve deneyimlerinden daima yararlandığım değerli hocam Prof. Dr. Raif Erişen'e ve kürsü başkanı Prof. Dr. Feyzi Batur'a; tezimin histopatolojik incelemelerinde yardımlarını hiç esirgemeyen ve tüm laboratuvar imkanlarını sağlayan İ.Ü. Onkoloji Enstitüsü Tümör Patolojisi Birimi başkanı Prof. Dr. Gülçin Erseven ve Dr. Vakur Olgaç'a; hayvan deneylerinde bana deney yöntemlerini öğreten ve laboratuvar çalışmalarında bana destek olan Deneysel Tıp Araştırma Enstitü'sü, Deneysel Hayvan Biyolojisi ve Biyomedikal Uygulama Teknikleri Anabilim Dalı başkanı Yard. Doç Dr. Mutlu Küçük'e; tezimle ilgili bulguların istatistik analizlerinde bana her türlü yardımı sunan Tıpta Bilgisayar Uygulama Bilimdalı başkanı Prof. Dr. Rian Dişçi ve Dr. Hakan Çamlıca'ya; asistanlığımın başından itibaren uyarı, tavsiye, yardım ve sohbetlerinden her zaman istifade ettiğim Prof. Dr. Selmin Aşçı, Prof. Dr. Alpay Yırcalı, Prof. Dr. Sedat Küçükay, Prof. Dr. Işıl Küçükay, Doç. Dr. Faruk Haznedaroğlu, Doç. Dr. Kemal Sübay, Doç. Dr. Sema Yıldırım ve diğer bütün çalışma arkadaşlarıma teşekkürü bir borç bilirim.

İÇİNDEKİLER

BÖLÜM 1	
GİRİŞ VE AMAÇ	1
BÖLÜM 2	
GENEL BİLGİLER	5
BÖLÜM 3	
GEREÇ VE YÖNTEM.....	29
BÖLÜM 4	
BULGULAR.....	33
BÖLÜM 5	
TARTIŞMA	61
KAYNAKLAR.....	77

KAYNAKLAR

1. Alaçam, T.: Endodonti, 2. Basım, Barış Yayınları Fakülteler Kitabevi, Ankara 2000, s: 495-532.
2. Azar NG, Heidari M, Bahrami ZS and Shokri F. In Vitro Cytotoxicity of a New Epoxy Resin Root Canal Sealer, J Endod 2000; 26:462-65.
3. Bayırlı G.: Endodontik Tedavi I, İ.Ü Basımevi ve Film Merkezi, İstanbul 1998, S:399-495.
4. Bergdahl M, Wennberg A and Spangberg L. Biological effect of polyisobutylene on bony tissue in guinea pigs, Scand J Dent Res 1974; 82:618-21.
5. Bhambhani SM and Bolanos OR. Tissue reactions to endodontic materials implanted in the mandibles of guinea pigs, Oral Surg Oral Med Oral Pathol 1993; 76:493-501.
6. Bordoni N, Erasquin J. Periapical tissue reaction to root canal filling with a paste containing 7 per cent trioxymethylene, Oral Surg Oral Med Oral Pathol, 1970; 29:907-14.
7. Bratel J, Jontell M, Dahlgren U, Bergenholtz G. Effects of root canal sealers on immunocompetent cells in vitro and in vivo, Int Endod J 1998; 31:178-88.
8. Brodin P, Roed A, Aars H, Orstavik D. Neurotoxic effects of root filling materials on rat phrenic nerve in vitro, J Dent Res 1982; 61:1020-3.
9. Costa CAS, Teixeira HM, Nascimento ABL, Hebling J. Biocompatibility of an adhesive system and 2-hydroxyethylmethacrylate. ASDJ J Dent Child 1999; 66:337-42.
10. Cotran RS, Kumar V, Robbins SL.: Robbins Pathologic Basis of Disease, 4. Basım, W.B. Saunders Company, Philadelphia, 1989, s:39-86.
11. Crane DL, Heuer MA, Kaminski EJ and Moser JB. Biological and physical properties of an experimental root canal sealer without eugenol 1980; 6:438-45.
12. Das S. Effect of certain dental materials on human pulp in tissue culture. Oral Surg Oral Med Oral Pathol 1981; 52:76-84.
13. Deemer JP and Tsaknis PJ. The effects of overfilled polyethylene tube intraosseous implants in rats, Oral Surg Oral Med Oral Pathol 1979; 48:358-373.
14. Dölek S: Plevra sıvılarında immünohistokimyasal metodlarla epitelyal membran antijeni (EMA), alpha-1-anti-tyrpsin (AAT) ve alpha-1-anti-chymotyrpsin (ACT) kullanılarak malign mezotelyoma ile reaktif mezotel hücrelerinin ayırımı. Yüksek Lisans Tezi, İ.Ü Onkoloji Enstitüsü, İstanbul 1988.

15. Ebert J, Loeffler T, Zels H and Petschelt A. Sealing ability of RoekoSeal-A-utomix under different conditions, Abstract, IADR, Congress Vancouver, 1999.
16. Erausquin J and Muruzabal M. Necrosis of the periodontal ligament in root canal overfilling, *J Dent Res* 1966; 45:1084-92.
17. Erausquin J and Muruzabal M. Root canal fillings with zinc oxide-eugenol cement in the rat molar, *Oral Surg Oral Med Oral Pathol* 1967; 24:547-58.
18. Erausquin J, Muruzabal M. Tissue reaction to root canal cements in the rat molar. *Oral Surg Oral Med Oral Pathol* 1968; 26:360-73.
19. Erişen R, Yücel T, Küçükay S. Endomethasone root canal filling material in the mandibular canal. A case report, *Oral Surg Oral Med Oral Pathol* 1989; 68:343-5.
20. Ersev H, Schmalz G, Bayirli G, Schweikl H. Cytotoxic and mutagenic potencies of various root canal filling materials in eukaryotic and prokaryotic cells in vitro, *J Endod* 1999; 25:359-63.
21. Fini G, Lai G, Liberatore GM, Monti M. PTFE in reconstructive surgery on the face, *G Chir* 1992; 13:459-66.
22. Fonzi L, Kaistas V, Gasparoni A, Belli M, Capezzuoli L. In vivo and in vitro biocompatibility tests of endodontic cements, *Bull Group Int Rech Sci Stomatol Odontol* 1992, 35:13-21.
23. Forman GH, Rood JP. Successful retrieval of endodontic material from the inferior alveolar nerve, *J Dent* 1977; 5:47-50.
24. Gençoğlu N, Türkmen C, Aksoy H, Ahıskalı R. Investigation of a new silicon-based root canal sealer, Meeting of the Turkish Endodontic society İstanbul, 2000.
25. Gerosa R, Menegazzi G, Borin M, Cavalleri G. Cytotoxicity evaluation of six root canal sealers, *J Endod* 1995; 21:446-8.
26. Geurtsen W, Leyhausen G. Biological aspects of root canal filling materials-histocompatibility, cytotoxicity, and mutagenicity, *Clin Oral Investig* 1997; 1:5-11.
27. Görduysus MÖ, Etikan I and Gököz A. Histopathological Evaluation of the Tissue Reactions to Endo-Fill Root Canal Sealant and Filling Material in Rats. *J Endod* 1998; 24:194-196.
28. Grossman LI and Lally ET. Assessment of irritation potential of essential oils for root canal cement. *J Endod* 1982; 8:208-12.
29. Grossman LI. Setting time of selected essential oils with a standart root canal cement powder. *J Endod* 1982; 8:277-279.
30. Guttuso J. Histopathologic Study of Rat Connective Tissue Responses to Endodontic Materials. *Oral Surg Oral Med Oral Pathol* 1963; 16:713-27.
31. Harnden DG. Tests for carcinogenicity and mutagenicity, *Int Endod J* 1981; 14:35-41.

32. Hartmann F. Clinical application of corticoids, *Int Dent J* 1981; 31:273-85.
33. Holland R, de Souza V, Nery MJ, Filho JAO, Bernabe PFE and Dezan E. Reaction of Rat Connective Tissue to Implanted Dentin Tubes Filled with Mineral Trioxide Aggregate or Calcium Hydroxide, *J Endod* 1999; 25:161-166.
34. Hoover J, Thoma GW and Madden RM. The effect of endodontic sealers on bone. *J Endod* 1980; 6:586-90.
35. Hume WR. The pharmacological and toxicological properties of zinc oxide-eugenol. *JADA* 1986; 113:789-91.
36. Ingle JI ve West JD. Obturation of the radicular space.: İçinden: Ingle J, Bakland LK, *Endodontics*, 4. basım, Williams ve Wilkins, Baltimore, 1994: 228-319.
37. Kai Wu M, Kontakiotis EG and Wesselink PR. Long-Term Seal Provided by Some Root-End Filling Materials, *J Endod* 1998; 24:557-560.
38. Kasman GF and Goldman M. Tissue response to silicone rubber when used as a root canal filling. *Oral Surg Oral Med Oral Pathol* 1977; 43:607-14.
39. Kaufman AY, Rosenberg L. Paresthesia caused by Endomethasone, *J Endod*, 1980; 6:529-31.
40. Kawakami T, Nakamura C, Hasegawa H, Akahane S and Eda S. Ultrastructural study of initial calcification in the rat subcutaneous tissues elicited by a root canal filling material. *Oral Surg Oral Med Oral Pathol* 1987; 63:360-5.
41. Keiser K, Johnson CC and Tipton DA. Cytotoxicity of Mineral Trioxide Aggregate Using Human Periodontal Ligament Fibroblasts. *J Endod* 2000; 26:288-291.
42. Kerezstesi K and Kellner G. The Biological Effect of Root Filling Materials. *Int Dent J* 1966; 16:222-31.
43. Kettering JD and Torabinejad M. Investigation of Mutagenicity of Mineral Trioxide Aggregate and Other Commonly Used Root-End Filling Materials, *J Endod* 1995; 21:537-39.
44. Kettering JD, Torabinejad M. Cytotoxicity of root canal sealers: a study using HeLa cells and fibroblasts. *Int Endod J* 1984; 17:60-66.
45. Koh ET, McDonald F, Pitt Ford TR and Torabinejad M. Cellular Response to Mineral Trioxide Aggregate, *J Endod* 1998; 24:543-47.
46. Kolokuris I, Economides N, Beltes P and Vlemmas I. In Vivo Comparison of the Biocompatibility of Two Root Canal Sealers Implanted into the Subcutaneous Connective Tissue of Rats, *J Endod* 1998; 24:82-85.
47. Koulaouzidou EA, Papazisis KT, Beltes P, Geromichalos GD, Kortsaris AH. Cytotoxicity of three resin-based root canal sealers: an in vitro evaluation, *Endod Dent Traumatol* 1998; 14:182-5.

48. Laband P. Tissue reaction to root canal cements containing paraformaldehyde, *Oral Surg Oral Med Oral Pathol* 1978; 46:265-74.
49. Lambjerg-Hansen, H. Vital pulpectomy and root filing with N2 or Endomethasone, *Int Endod J* 1987; 20:194-204.
50. Langeland K. Root Canal Sealants and Pastes, *Dent Clin North Amer*, 1974; 18:309-327.
51. Lenande-Lumikari M, Sigurdsson A and Orstavik D, Postoperative pain reactions following treatment and root filling of teeth with a new, silicone-based sealer, Abstract, 4th CED/NOF Joint Meeting of the IADR Warsaw, 2000 S.232
52. Leonardo MR, Bezerra da Silva LA, Filho MT and Santana da Silva R. Release of formaldehyde by 4 endodontic sealers. *Oral Surg Oral Pathol Oral Med* 1999; 88:221-5.
53. Leonardo MR, Silva LAB, Almeida WA, Utrilla LS. Tissue response to an epoxy resin-based root canal sealer, *Endod Dent Traumatol* 1999; 15:28-32.
54. Leyhausen G, Heil J, Reifferscheid G, Waldmann P and Geurtsen W. Genotoxicity and Cytotoxicity of the Epoxy Resin-Based Root Canal Sealer AH Plus, *J Endod* 1999; 25:109-13.
55. Maseki T, Nakata K, Kohsaka T, Kobayashi F, Hirano S and Nakamura H. Lack of Correlation between the Amount of Eugenol Released from Zinc Oxide-Eugenol Sealer and Cytotoxicity of the Sealer. *J Endod* 1991; 17:76-79.
56. Meryon SD, Brook AM. In vitro comparison of the cytotoxicity of twelve endodontic materials using a new technique, *Int Endod J* 1990; 23:203-210.
57. Meryon SD, Johnson GS and Smith AJ. Eugenol release and the cytotoxicity of different zinc oxide-eugenol combinations. *J Dent* 1988; 16:66-70.
58. Mittal M, Chandra S and Chandra S. Comparative Tissue Toxicity Evaluation of Four Endodontic Sealers. *J Endod* 1995; 21:622-24.
59. Molloy D, Goldman M, White RR, Kabani S. Comparative tissue tolerance of a new endodontic sealer, *Oral Surg Oral Med Oral Pathol* 1992; 73:490-3.
60. Morse DR, Wilcko JM, Pullon PA, Furst ML, Passo SA. A comparative tissue toxicity evaluation of the liquid components of gutta-percha root canal sealers. *J Endod* 1981; 7:545-50.
61. Muruzabal M Erasquin J. Response of periapical tissues in the rat molar to root canal fillings with Diaket and AH-26, *Oral Surg Oral Med Oral Pathol* 1966; 21:786-804.
62. Muruzabal M, Erasquin J and De Voto FCH. A study of periapical overfilling in root canal treatment in the molar of rat, *Arch Oral Biol* 1966; 11:373-76.

63. Nakamura H, Sakakibara F, Matsumoto Y, Hirano S, Hayakawa H, Sakai K and Yip M. Study on the Cytotoxicity of Root Canal Filling Materials. *J Endod* 1986; 12:156-160.
64. Ollson B, Sliwowski A and Langeland K. Sucutaneous implantation for the biological evaluation of endodontic materials, *J Endod* 1981; 7:355-69.
65. Orstavik D, Mjor IA. Usage test of four endodontic sealers in *Macaca fascicularis* monkeys, *Oral Surg Oral Med Oral Pathol* 1992; 73:337-44.
66. Pascon EA, Leonardo MR, Safavi K and Langeland K. Tissue reaction to endodontic materials: Methods, criteria, assessment, and observations, *Oral Surg Oral Med Oral Pathol* 1991; 72:222-37.
67. Pissiotis E and Spangberg L. Reaction of bony tissue to implanted silver glass ionomer and a reinforced zinc oxide-eugenol cement, *Oral Surg Oral Med Oral Pathol* 2000; 89:623-9.
68. Pitt Ford TR, Torabinejad M, McKendry DJ, Hong CU and Kariyawasam SP, *Oral Surg Oral Pathol Oral Med* 1995; 79:756-62.
69. Pitt Ford TR. Tissue reactions to two root canal sealers containing formaldehyde, *Oral Surg Oral Med Oral Pathol*, 1985; 60:661-665.
70. Reid RJ, Wilson DF, Chau KK, Heithersay GS, Heijkoop PS. Tissue responses to Hydron, assessed by intraosseous implantation, *Int Endod J* 1992; 25:192-8.
71. Rowe AH. Effect of root filling materilas on the periapical tissues, *Br Dent J* 1967; 122:98-102.
72. Salamon JP, Remusat M, Franquin JC. Osseous biocompatibility of Endomethasone, *Rev Fr Endod* 1990; 9:11-9.
73. Schwartz RS, Mauger M, Clement DJ, Walker WA. Mineral Trioxide Aggregate: A New Material for Endodontics, *JADA* 1999; 130:967-75.
74. Schweikl H, Schmalz G, Federlin M. Mutagenicity of the root canal sealer AHPlus in the Ames test, *Clin Oral Investig* 1998; 2:125-9.
75. Schweikl H, Schmalz G. The induction of micronuclei in V79 cells by the root canal filling material AH plus, *Biomaterials* 2000; 21:939-44.
76. Serper A, Üçer O, Onur R, Etikan İ. Comparative neurotoxic effects of root canal filling materials on rat sciatic nerve, *J Endod* 1998; 24:592-4.
77. Setzen G, Williams EF. Tissue response to suture materials implanted subcutaneously in a rabbit model, *Plast Reconstr Surg* 1997; 100:1788-95.
78. Shabahang S, Torabinejad M, Boyne PP, Abedi H and McMillan P. A Comparative Study of Root-End Induction Using Osteogenic Protein-1, Calcium Hydroxide, and Mineral Trioxide Aggregate in Dogs, *J Endod*. 1999; 25:1-5.
79. Sluyk SR, Moon PC and Hartwell GR. Evaluation of Setting Properties and Retention Characteristics of Mineral Trioxide Aggregate When Used as a Furcation Perforation Repair Material, *J Endod* 1998; 24:768-71.

80. Soares I, Goldberg F, Massone EJ and Soares IM. Periapical Tissue Response to Two Calcium Hydroxide-containing Endodontic Sealers, *J Endod* 1990; 16:166-69.
81. Spangberg L and Langeland K. Biological effects of dental materials, *Oral Surg Oral Med Oral Pathol*, 1973; 35:402-14.
82. Spangberg L. Biologic effects of root canal filling materials. *Oral Surg Oral Med Oral Pathol* 1974; 38:934-944.
83. Spangberg L. The study of biological properties of endodontic biomaterials. *Experimental Endodontics*. Boca Raton, Fl. CRC Press, 1990.
84. Stites DP: Clinical Laboratory Methods for Detection of Cellular Immunity, İçinden: Stites DP, Terr AL., *Basic and Clinical Immunology*, 7. Basım, Appleton and Lange, Lebanon, 1991:263-283.
85. Tagger M and Tagger E. Effect of Implantation of AH26 silver-free in subcutaneous tissue of guinea-pigs. *Int Endod J* 1986; 19:90-97.
86. Tassery H, Pertot WJ, Camps J, Proust JP and Dejou J. Comparison of Two Implantation Sites for Testing Intraosseous Biocompatibility, *J Endod* 1999; 25:615-18.
87. Tepel J, Darwisch el Sawap M, Hoppe W. Reaction of inflamed periapical tissue to intracanal medicaments and root canal sealers, *Endod Dent Traumatol* 1994; 10:233-8.
88. Torabinejad M and Noah Chivian. Clinical Applications of Mineral Trioxide Aggregate, *J Endod* 1999; 25:197-205.
89. Torabinejad M, Hong CU, McDonald F and Pitt Ford TR. Physical and Chemical Properties of a New Root-End Filling Material, *J Endod* 1995; 21:349-53.
90. Torabinejad M, Hong Cu, Pitt Ford TR and Kariyawasam SP. Tissue Reaction to Implanted Super-EBA and Mineral Trioxide Aggregate in the Mandible of Guinea Pigs: A Preliminary Report, *J Endod* 1995; 21:569-71.
91. Torabinejad M, Hong CU, Pitt Ford TR and Kettering JD. Antibacterial Effects of Some Root End Filling Materials, *J Endod* 1995; 21:403-406.
92. Torabinejad M, Hong CU, Pitt Ford TR and Kettering JD. Cytotoxicity of Four Root End Filling Materials. *J Endod* 1995; 21: 489-492.
93. Torabinejad M, Kettering JD and Bakland KL. Evaluation of systemic immunological reactions to AH-26 root canal sealer, *J Endod* 1979; 5:196-200.
94. Torabinejad M, Pitt Ford TR, Abedi HR, Kariyawasam SP and Tang HM. Tissue Reaction to Implanted Root-End Filing Materials in the Tibia and Mandible of Guinea Pigs, *J Endod* 1998; 24:468-71.
95. Torabinejad M, Pitt Ford TR, McKendry DJ, Abedi HR, Miller DA and Kariyawasam SP, Histologic Assessment of Mineral Trioxide Aggregate as a Root- end Filling in Monkeys, *J Endod* 1997; 23:225-28.

96. Wegner JS, Tsaknis PJ, del Rio CE and Ayer WA. The effects of partially filled polyethylene tube intraosseous implants in rats, *Oral Surg Oral Med Oral Pathol* 1978; 46:88-100.
97. Wennberg A. Biological evaluation of root canal sealers using in vitro and in vivo methods. *J Endod* 1980; 6:784-787.
98. White E, Shors EC. Biomaterial aspects of Interpore - 200 porous hydroxyapatite, *Dent Clin North Am* 1986; 30:49-67.
99. Willershausen B, Hagedorn B, Schafer D, Marroquin BB. Biocompatibility of orthograde and retrograde root canal filling materials, *AAE American Association of Endodontists, 2000, Oral Research and Poster Research Abstracts*.
100. Yeşilsoy C and Feigal RJ. Effects of Endodontic Materials on Cell Viability Across Standart Pore Size Filters. *J Endod* 1985; 11:401-7.
101. Yeşilsoy C, Koren LZ, Morse DR and Kobayashi C. A comparative tissue toxicity evaluation of established and newer root canal sealers, *Oral Surg Oral Med Oral Pathol* 1988; 65:459-67.
102. Zhu Q, Haglund R, Safavi KE and Spangberg LSW. Adhesion of Human Osteoblasts on Root-End Filling Materials, *J Endod* 2000; 26:404-406.
103. Zmener O and Cabrini LR. Adhesion of Human Blood Monocytes and Lymphocytes to Different Endodontic Cements. A Methodological In Vitro Study, *J Endod* 1986; 12:150-55.
104. Zmener O and Dominques FV. Tissue response to a glass ionomer used as an endodontic cement, *Oral Surg Oral Med Oral Pathol* 1983; 56:198-205.
105. Zmener O, Guglielmotti MB and Cabrini RL. Biocompatibility of Two Calcium Hydroxide-based Endodontic Sealers: A Quantitative Study in the Subcutaneous Connective Tissue of the Rat. *J Endod* 1988; 14:229-35.