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### **Endodontic Treatment Modifies Circulatory Inflammatory Mediator Levels: a Systematic Review**

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**Objectives** Apical periodontitis (AP) represents persistent inflammation within the periapical tissues mostly caused by a range of microorganisms of endodontic origin. Locally produced mediators and microbial virulence factors may enter the bloodstream and potentially sustain a persistent low-grade systemic inflammation, exerting an impact on the general health of the patient. This investigation aimed to systematically review and critically evaluate the evidence on reducing circulatory inflammatory mediators in patients with AP after successful endodontic nonsurgical and surgical treatment.

**Methods** This systematic review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA) statement, and the protocol of the review was registered *a priori* with the PROSPERO. A literature search was conducted across the following electronic databases: Web of Science, Scopus, and PubMed from inception to March 2024, with no language restriction. The Gray literature was additionally searched to ensure study inclusivity. Observational studies with prospective or retrospective designs were included. Articles with duplicate or overlapping results, abstract-only papers, case reports, case series, animal studies, and reviews were excluded. All phases were completed by two independent researchers while disagreements were resolved by a third reviewer. The Newcastle–Ottawa Scale (NOS) was used to assess the quality of included studies.

**Results** Sixteen studies were included in the final review following full-text evaluation. As the included studies reported different outcomes, the heterogeneity of data prevented a meta-analysis being undertaken. The included studies were published between 1990 and 2024, with a total of 957 participating individuals with an approximate age range of 18 to 70 years. Although different inflammatory mediators were assessed, most of the studies investigated the change in the serum levels of C-reactive protein before and after endodontic treatment. The overall quality of the evidence for the most included studies was ‘Fair’, while five studies were categorized as ‘Good’.

**Conclusions** Based on ‘Fair’ and ‘Good’ quality of evidence it has been shown that



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successful endodontic treatment reduces the level of circulatory inflammatory mediators in patients with AP.