



TITLE: Biomimetic Approach to Natural Products - A Shift to Green Dentistry: Myth or Prospective?

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ABSTRACT

Scientific Background: Biomimetic dentistry is concerned with the preservation of intact tooth structure and restoring the function and biomechanics of natural teeth typically applied to restorative and esthetic dentistry, but it can be applied to any dental discipline. It addresses synthetic restorative materials to fulfill the “Biomimetic Concept” via several approaches including stress reduction, bond maximization and tissue engineering. However, the biomimetic concept should be broadened to include antibacterial and anti-inflammatory potentials that can be provided by natural products. Moreover, the global need for safe, effective, and economical alternative prevention and treatment options elicited the shift to natural products to avoid the side effects of chemical agents, increased disease incidence, increased bacterial resistance to current antibiotics and financial considerations in developing countries. This novel approach

involves rendering the whole system behaving in a natural biologic manner to attain biomimicry rather than simply replacing the lost tooth structure. **Aim:** To obtain a comprehensive review of the existing updated literature on natural alternatives or additives to dental products which depicts their classification as “Biomimetic materials” as they fulfill the requirements of the wider scope of “Biomimetic Dentistry”. **Sources:** Two databases (Pubmed and Google Scholar) were searched to obtain relevant articles. Articles related to natural products applications in dentistry and biomimetic concept in dentistry were included while those related to synthetic commercially available dental materials were excluded. **Implications:** Natural products possess advantages of proven biocompatibility, antimicrobial potency, remineralization efficiency, in addition to osteogenic and angiogenic potentials. Thus, they constitute a group of promising materials to be employed in biomimetic dentistry.



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BIOGRAPHY

1) Shaymaa Habib is a professor of Dental Materials Science. She has several publications related to natural products. She also supervised master's and Ph.D. theses on natural products. She works as course director of master's and Ph.D. courses, an example of which is Science of Biocompatibility courses, and Materials Testing. She has been a member of the faculty evidence-based committee.



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2) Nehal Abou Raya an assistant professor of Dental Materials Science, published several articles concerning natural products and co-supervised master's and Ph.D. theses in the same scope. She works as course director of master's and Ph.D. courses, an example of which is Biodegradation and Failure of Dental Materials and Scientific Writing. She has been a member of the faculty research plan committee.



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