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## Recent insights into chemical and pharmacological studies of bee bread

(Review)

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### Abstract

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**Background:** Bee bread is a product of the fermentation of a mixture of pollen, nectar and bee saliva that is inoculated by a wide range of bacteria and yeasts necessary for fermentation after storage in comb cells. Bee bread is regarded as the chief protein resource that bees can utilize, especially for feeding of larvae and adults. Since ancient times, bee bread has been used in different cultures for several nutritional and therapeutic purposes. **Scope and approach:** In this review, we attempt to highlight the possible biological activities, chemical components, methods of isolation and structure of bee bread in addition to its food supplement value and/or medical applications. **Key findings and conclusions:** Bee bread has been shown to exhibit antimicrobial, antioxidant, antiradical, anticancer, and anti-inflammatory activities. The basic chemical components of bee bread include carbohydrates, proteins and vitamins, as well as minerals, fatty acids and other substances such as enzymes, natural antibiotics, antioxidants and hormones. Bee bread is considered to be a beneficial food supplement. In recent years, there has been significant interest in the use of bee bread to treat many illnesses. © 2019 Elsevier Ltd

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