

**Abstract:** Bee pollen is used nutritionally as a dietary supplement for humans. Bee pollen is obtained from honey bees and contains several nutritional components including carbohydrates, lipids, vitamins and minerals. Besides having proved health benefits its therapeutic use is still elusive. Here we demonstrate that a monofloral bee pollen is composed of flavonoids with elevated free radical scavenging ability and antimicrobial activity against gram-positive and gram-negative bacteria and fungi. The aim of this study was to evaluate the antinociceptive and anti-inflammatory activities of ethanolic extract, hexane, ethyl acetate and aqueous methanolic fractions of *Apis mellifera* monofloral (*M. pudica*) bee pollen. The chemical composition was analyzed by ultra-performance liquid chromatography coupled with quadrupole time-of-flight mass spectrometry (UPLC/QTOF MS/MS). Two types of flavonoids (five flavonoid O-glycosides and four biflavonoids) were identified in extract and fractions by UPLC/QTOF MS/MS. Ethanolic extract, hexane, ethyl acetate and aqueous methanolic fractions significantly reduced writhing response induced by acetic acid. In order to understand the mechanisms behind this protective effect we tested the activity of K<sup>+</sup>ATP channels. Pretreatment with glibenclamide (a K<sup>+</sup>ATP channel blocker) did not reversed the ethanolic extract, hexanic and aqueous methanolic fractions effects. Strikingly, glibenclamide reversed ethyl acetate fraction effects. On the other hand, all fractions and ethanolic extract significantly reduced the paw licking time induced by formalin (late phase). Only aqueous methanolic fraction significantly inhibited the licking responses induced by formalin on early phase. Bee pollen ethanolic extract and fractions also inhibited paw edema at 4 hours (maximal inhibition) after carrageenan administration. On histopathological examination all fractions reduced edema and the number of inflammatory infiltrating cells after carrageenan insult. Strikingly, maximal effect was seen with EtOAc fraction treatment. Taken together, these results suggest that bee pollen rich in flavonoids may exert a therapeutic effect by blocking pain and inflammation. Taken together these results suggest the bee pollen may have beneficial properties for nutritional use and represents a potentially significant and novel source of drugs for pharmacological control of bacterial infection and oxidative imbalance.

**Keywords:** Pollen;Bees;Antimicrobials;Pain and inflammation.

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**Anexo:** [Tese completa Francisco Rodrigo PPgDITM.pdf](#)

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