

## BIOLOGICAL ACTIVITY, CHEMICAL CONTENT AND ACTIVE COMPOUNDS OF POLLEN OF THREE MALE CULTIVARS OF DATE PALM, *PHOENIX DACTYLIFERA* L

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**ABSTRACT :** The date palm is considered one of the most important economic and food fruit trees and spreads in large areas due to the importance of its fruits as well as other industries in which it enters. The male cultivars of pollen have a close relationship with the quality of fruits and production, as well as their use in some human treatments for their content of antioxidant compounds and medically active substances. This study was conducted for three cultivars of male pollen of date palm (Ghanami green, sesame and pink) in one of the date palm orchards in Basra Governorate, southern Iraq and studied the activity of the pollen and the chemical content in addition to its content of active substances. The study showed the superiority of Ghanami green and sesame significantly in giving the highest rate of pollen vitality by 97.33 %, while it was 95.66 % for the pink one, according to the acid carmine dye test. It was also noticed that the Ghanami green cultivar surpassed the other two cultivars in the antioxidant activity, which amounted to 21.14%, in addition to its superiority in its carbohydrate content which amounted to 18.78%, while the pink cultivar was noted to be superior in its protein content which amounted to 53.75 %. The three cultivars showed a clear response to the reagents used for the active compounds (alkaloids, tannins, flavonoids and sapindales) and this reinforces the effective role of pollen in the biological activity and pharmaceutical uses as well as its agricultural and economic importance.

**Key words :** Biological activity, chemical content, pollen, *Phoenix dactylifera* L.

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### INTRODUCTION

The date palm tree belongs to ARECACEAE family, which includes more than 200 genera and about 4000 species. It is the most beneficial plant family for humans after GRAMINEAE family. They are evergreen trees, monocotyledon, dioecious, belonging to the order of palms (palmae) that are common in subtropical regions (Zaid, 2019).

In Iraq, there are well-known, classified, and most frequently used male species in the pollination process, namely: Al-Ghanami Al-Akhdar, Al-Ghanami Al-Ahmar, Al-Ghulami, Al-Rasasi, and Al-Kukri with their lineages (Al-Adi, Al-Wardi, Al-Kreitli and Al-Samisim), in addition to the presence of other stallion breeds used in the pollination process. The season of pollen production begins in the second half of February and extends until

April. Al-Ghulami, and Al-Kukri Al-Adi are considered the early cultivars of pollen, as male pollen appears in the third week of February. The middle cultivars are Al-Ghanami Al-Akhdar, Al-Ghanami Al-Ahmar, and Al-Kukri Al-Wardi, as they begin blooming in the first week of March, while the late cultivars bloom in late March and early April, namely Al-Kukri Al-Kreitli and Al-Samisim. (Omar, 2015).

Interest in studying pollen is increasing, not only because it is one of the direct causes of date palm fruits, but because it contains good chemical compounds that are beneficial to humans, therefore it is an integrated food element, and it is considered the royal food of honey bees (Salomon Torres *et al*, 2017).

The chemical composition of pollen grains is the basic indicator in determining the fertility of the date palm is of

**Table 1** : showing the results of chemical detection of some active ingredients in pollen (Al-Ghanami Al-Akhdar, Al- Samisim and Al-Wardi).

S. no.	Active chemical ingredients	Detector used	Detection result		
			Pollen		
			Ghanami Akhdar	Samisim	Wardi
1	Alkaloids	a. Mayer's Reagent	+	+	+
		b. Wagner's Reagent	+	+	+
2	Tannins	a. Ferrous chloride	+	+	+
		b. Lead Acetate	+	+	+
3	Flavones	a. Ethyl Alcohol + KOH	+	+	+
4	Saponins	a. Shake the aqueous extract	+	+	+

+ response of the detector

- Non- response of the detector

agricultural and economic importance (Ghosh, 2021 and Mohen *et al*, 2016).

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