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# List of Abbreviations

| | |
|---|---|
| **A** | Venom manually extracted |
| **AC** | Carniolan venom manually extracted |
| **AE** | Egyptian venom manually extracted |
| **AHV** | Africanized honeybee venom |
| **ANOVA** | ANalysis Of VAriance |
| **APS** | Ammoniun persulfate |
| **B** | Venom electrically stimulated |
| **BC** | Carniolan venom electrically stimulated |
| **BE** | Egyptian venom electrically stimulated |
| **BPB** | Bromophenol blue |
| **BSA** | Bovine serum albumin |
| **BV** | Bee venom |
| **BVM** | Bee venom melittin |
| **D** | Dark at room temperature |
| **Da** | Dalton |
| **EHV** | European honeybee venom |
| **F** | Freezer |
| **H** | Hour |
| **HBV** | Honey bee venom |
| **IEF** | Isoelectric focusing |
| **KDa** | Kilo- Dalton |
| **L** | Light at room temperature |
| **LD50** | Lethal Dose |
| **LSD** | Least Signicant Different. |
| **M** | markers |
| **Mg** | milligram |

| | |
|---|---|
| **Min** | minute |
| **MW** | Molecular weight |
| **Nm** | Nanometer |
| **PAGE** | Polyacrylamide gel electrophoresis |
| **PBV** | Purified bee venom |
| ***p*I** | Isoelectric point |
| **PLA2** | Phospholipase A2 |
| **R** | Refrigerator |
| **RBC** | Red blood cell |
| **Rm** | Relative mobility |
| **S.E.** | Standard error |
| **S.I** | Similarity index |
| **SDS** | Sodium dodecyl sulphate |
| **TCA** | Trichioroacetic acid |
| **TEMED** | N,N,N',N'- tetramethylenediamine |
| **Tris** | Tris (hydroxymethyl) amino methane |
| **TRU** | Turbidity reducing units |
| **U** | Unit |
| **µg** | Microgram |
| **µl** | Microliter |
| **UV** | Ultraviolet |
| **W/V** | Weight per volume |

# ABSTRACT

In the present study the spectrophotometer, electrophoresis and toxicity studies were carried to evaluate: 1- efficiency of the venom components for two honeybee subspecies (*A. m. lamarchii* & *A. m. carnica*) extracted by two different methods (manual extracted and electrical stimulated) 2- the effects of storage conditions (freezer, refrigerator, room temperature in the dark and in the light) on efficiency of venom components stored for 24 months. The results obtained revealed that venom electrically extracted (Egyptian & Carniolan subspecies) and the Egyptian bee venom (manually & electrically extracted) have significantly highest activities of the hyaluronidase, PLA2, melittin, protease and toxicity.

The different storage conditions were also significantly affected on enzymatic and melittin activities, electrophoretic mobilities and toxicity of the bee venoms during the storage periods. Melittin was the highest affected with storage conditions in the freezer, followed by refrigerator and under room temperature in the light condition, respectively. PLA2 activity was the most affected with storage under room temperature in the dark condition during all storage periods in the two bee venoms.

Lowest values of the reduction (%) in the enzymes and melittin activities and toxicity were detected under freezer storage condition while the highest values of the reduction (%) were under storage at room temperature in the light condition for the two bee venoms during the storage periods. Freezing was the best storage conditions for honeybee venom within the range that assures

preserve maximum activity of their components, stability and prolonged storage with high quality and efficiency.

The Egyptian bee venom has significantly higher activity and toxicity than Carniolan bee venom under all storage conditions during storage periods and was the better form for potential pharmacological source.

**Key word:**

Electrophoresis – venom – honeybee – storage conditions enzyme activities – melittin – LD50.