

# CONSERVATION OF MAMMALIAN SPECIMENS IN MUSEUMS: A CASE STUDY ON DEER SKIN WITH SPECIAL REFERENCES OF RESTORATION AND PREVENTIVE CONSERVATION

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**Abstract:** Museums play a great role in safeguarding heritage materials whether it is cultural and natural. In museums, objects or specimens are not only collected and preserved, but also conserved to remain stable for a long time. Museums have the various types of collections like Archeological, Ethnographical, Science and Technological, Natural History and moreover. These collections get deteriorated or damaged by different factors like biotic (Insects, Rodents, Microorganism etc.) and abiotic (Pollutants, Mishandling, Fluctuating Temperature, Humidity and so on). The deteriorated specimens may be treated by different techniques and methods which are based on nature and condition of the specimens. In this paper, conservation method of Natural History collection is described. The Natural History collection includes zoological, botanical, geological specimens and the materials extracted from the natural world. The natural history collection has the significant values in education and research, since it provides physical records of species and the relationships with the environment and this collection acts as evidences for the researchers to be studied for a different purposes like Taxonomy, Cytology, Ecology and so on. However, the Natural History Collection in museums is preserved in a proper way but being organic in nature, sometimes it gets deteriorated by different factors especially biotic like fungi, insects, rodents etc. So, it needs regular maintenance. If the collection gets started deteriorated, it should urgently be conserved through the scientific and reversible methods.

**Index Terms-** Biodeterioration, Conservation, Museum, Natural History Specimen

## 1. INTRODUCTION

Museums collect and care the valuable heritage materials to keep them stable for a long time. So that, these heritage materials could be transferred to the future generations, However, it is very challenging task, since collections in museums have a different nature and they require different environmental conditions to remain stable for a long time. There are many factors which are responsible for the deterioration of Museum objects or specimens, in which, fluctuation of Temperature and Humidity, Mishandling, environmental pollution and so on are included in the abiotic factors of deterioration, while fungi, bacteria, rodents, microorganisms are associated in biotic factors of deterioration. Sometimes, Collections in museums get damaged and deteriorated

by different agencies. So, these deteriorated objects or specimens are treated to be stabilized by the process of conservation. Conservation is the most significant function of the museum. The ICOM. C. C (Committee for Conservation of the International Council of Museums) defines the conservation as “Encompassing all measures and actions aimed at safeguarding tangible cultural heritage, ensuring its accessibility for present and future generations, including preventive and remedial conservation, and restoration”

In this paper, conservation of Natural History Collection is described. The Natural History Collection contains the zoological, botanical, geological specimens and the materials extracted from the Natural World. Being organic in nature, it is very susceptible to be deteriorated by biotic and abiotic factors. The Natural History Specimen needs special care and maintenance to be kept in a stable condition. The deteriorated and damaged Specimens are treated with the process of conservation. However, there are some important things which have to be considered for doing the conservation such as avoid the toxic material, non-reversible adhesives, harmful chemicals etc. since they may be causes of serious problems for the staffs, collections and visitors.

So, in this regard, a damaged specimen (Deer Skin) displayed in IBN E SINA Academy Museum, Aligarh, U.P. (India) was issued to the authors to do conservation work through the reversible and scientific techniques. So, implementing the process of conservation, the treatment was done that is described below.

### **A CASE STUDY ON: “CONSERVATION OF DEER SKIN AT IBN SINA ACADEMY MUSEUM”**



Fig.1. Before conservation

## 2. HISTORY OF IBN SINA ACADEMY

Ibn Sina Academy of Medieval Medicine & Sciences was founded on March 1, 2000. The Academy has been registered under Indian Trusts Act, 1882 and was formally inaugurated on April 20, 2001. Department of AYUSH, Ministry of Health & Family Welfare, Govt. of India gave accreditation to the academy in 2004 and promoted it as 'Centre of Excellence' in 2008. The Academy is now a non-governmental, non-political and non-profit organization with multiple aims and objectives. The Academy has two museums on separate themes, in which, one is based on medicine and science and another is art, culture oriented.

### 2.1. Karam Hussain Museum on History of Medicine & Sciences.

Karam Husain Museum on History of Medicine and Sciences is an academic unit with collections and exhibitions. The main theme is the history of health and disease in a cultural perspective, with focus on the material and iconographic culture of medieval medicine and sciences. The museum has categorically the pictures and busts of physicians belonging to Mesopotamia, Babylonian, Egyptians, Greeks, Arab and Indian civilizations. In addition, medical manuscripts, catalogues, medical philately, medical souvenirs, memoirs of physicians including Nobel laureates, etc, are preserved and exhibited.

### 2.2. Hakim Fazlur Rahman Museum on Arts, Culture and Orientalism.

The museum has a large collection of coins, postage stamps, gemstones, paintings, engravings, water color, drawings, photographic print, utensils, garments including calico, busts, pens, memoirs and relics of some prominent personalities. In the museum, there are family collections like Prof. Syed Mahmood Husain Family Collection, Roohi Mabud Hasan Family Collection, etc.

## 3. MATERIAL AND METHODS

After receiving the Specimen, the conservation work was started including the steps like Documentation, Cleaning, Restoration, Creation, Retouching etc. Before doing the treatment, the Documentation was done. The Documentation is the process of recording information of a specimen like its Photography, History, Previous treatment, Conservation Status, Deteriorating problems etc. In this case, specimen's problems were identified and written in a documentation sheet and the photography was done to make the analysis of the specimens before and after Conservation. Some problems found in the specimen are shown below.



Fig. 2. Tears

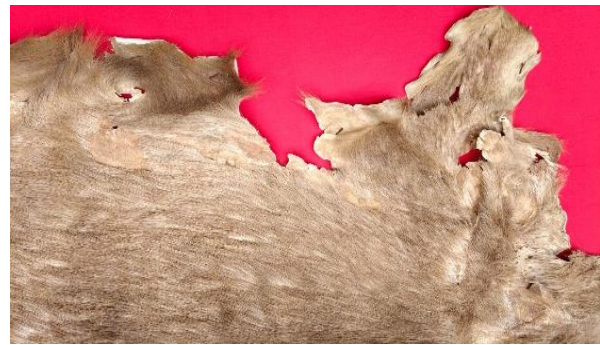


Fig. 3. Lost skin from the Edges



Fig. 4. Hole



Fig. 5. Lost skin



Fig. 6. Rust



Fig. 7. Nail spot

#### 4. RESTORATION AND CURATIVE CONSERVATION.

After the documentation process, the specimen was cleaned in the direction of hair of the skin with the soft hair brushes and cotton cloth for removing the dust and detached hair from it. The wet cleaning was done using the solution of Ethanol (40-70%) and distilled water for removing dirt and other accumulations. However, the proportion of the solution depends on the nature and condition of a specimen like Specimen's Fragility, Dryness, Colours etc. The wet cleaning is done as a swab stick or cotton ball is dipped in a solution and squeezed to

remove excessive solution from it and gently applied on the dirt spots and other affected areas of a specimen. After completing the cleaning process, consolidation was done using Paraloid B-72 to fix the loose and broken parts of the specimen, because consolidation provides a strength to a specimen. If a specimen is very delicate and in fragile condition, it has to be consolidated before starting the treatment. In the consolidation, many materials can be used like Rasin, Wheat Starch, Carboxy Methyl Cellulose, Paraloid and so on, which are prepared in Acetone, Ethanol, Xylene etc, in a specific proportion (2-5% in 100 m.l solvent). The thing has to be ensured, while doing the consolidation that the material should not be harmful to a specimen.

After fixing the loose parts of the specimen, the creation was done using non-acidic and non-toxic material (hair, skin, leather) for restoring the specimen. In the restoration process, a specimen is reshaped, creating and treating its lost and broken parts. Having completed the creation, the specimen was retouched using acrylic colour to look uniform.

#### 4.1. Preventive Conservation.

After completing the treatment, Preventive conservation was done to avoid the further deterioration in the specimens using herbal pesticides and essential oils (Neem, Clove, Cinnamon, Sandal), which were applied on the hidden parts of the specimen. Using essential oils and herbal materials may be good alternatives of the chemicals which are toxic and harmful for the staff and visitors. So, avoiding risky pesticides and insecticides, ecofriendly material should be used in the preventive conservation.



Fig. 8. Dry Cleaning



Fig. 9. Cleaning of Backside



Fig. 10. Chemical Cleaning



Fig. 11. Solution Applied on Fungal spots



Fig.12. Fill the gaps

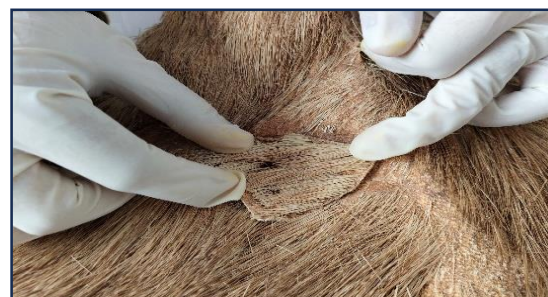


Fig.13. Fix the detached pieces



Fig. 14. Fix the loose hair



Fig. 15. Retouching

## 4.2. RESULT AND DISCUSSION

In this study, a deteriorated specimen (Deer Skin) has been conserved through the reversible and scientific technique, including Documentation, Cleaning Consolidation, Restoration and so on. In this work, reversible materials have been considered and all the chemicals and adhesives were tested on the minor and hidden parts of the specimen. Toxic and harmful materials for the specimen, conservator staffs etc, have been avoided and place of it, herbal pesticides and essential oils have been used for the health and safety purposes. After completing the work,

some photographs of before and after conservation of the specimen is mentioned below to analyze the result.

**Before Conservation**



**After Conservation**



## Conclusion

Museums play a great role in the protection of Heritage material by collecting, documenting conserving, display and research. In museums, many types of collections like Natural History, Archaeological, Ethnographical, Technological and moreover are preserved to keep them in a stable condition. For maintaining their collections, museums operate different functions like Documentation, Conservation, Exhibition, Storage and so on. Conservation is the very significant process in a museum and it is used as treatment of a deteriorated or damaged specimen or object.

In this paper, conservation of natural history specimen is described with a case study done on a Deer skin preserved in the IBN SINA Academy Museum, Aligarh, Uttar Pradesh. After taking the specimen, conservation treatment was started, in which its photography was done to make the analysis of before and after conservation. After the photography, the dry cleaning was done to remove the dust, detached parts, and hair from the skin, while accumulated spots and dirt were removed with the wet cleaning. The loose and fragile parts were fixed by the process of consolidation and the detached and broken parts were fixed using nontoxic and reversible adhesives (Klucel G, Wheat Starch in Ethanol). After completing the Restoration process, the retouching was done using acrylic colour to make the whole specimen look uniform. The preventive conservation was done using the herbal pesticides and essential oils which were applied on the hidden parts of the specimen, in the diorama and around the gallery or museums to avoid the further deterioration. Using herbal material in the conservation process is very helpful to maintain the ecofriendly environment for the health and safety purpose.

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