JUSTIN OKOSI

THE EFFECTS OF PRESERVATION METHODS ON THE PROPERTIES OF BONE AND SOFT TISSUE

APRIL 13, 2012
INTRODUCTION

I. History
II. Significance
III. Relation to Anthropology
OBJECTIVES

I. To test and determine if any preservation method used has effects on the specimen which they are treated with.

I. Strain [http://www.uwgb.edu/dutchs/structge/stress.htm]

II. Youngs Modulus [http://www.wisegeek.com/what-is-youngs-modulus.htm]

III. Hardness

IV. Discoloration

V. Thickness

Hypothesis: Preservation methods have effects on mechanical properties
METHODS

I. Samples:
   4 Cat humeri and 4 Chicken humeri

II. Materials:
   Strain Gage
   Vishay P-3500 Strain Indicator
   Instron Rockwell Hardness Tester
   Color Chart
   Needle
   Weights
METHODS: MATERIALS

Strain Indicator

Weights

Strain Gage

Hardness Tester
DATA COLLECTION

- Location:
  - Engineering Building
  - Student Success Center
  - Garage
DATA COLLECTION

Removal of Soft Tissue

Soft Tissue Storage
DATA COLLECTION

Prep of Strain Gage

Attachment of Strain Gage
DATA COLLECTION

Whole Cat

Cat with Legs removed
RESULTS

Control

Frozen chicken

mass (g)

0
-150 -100 -50 0 50

Strain

Bone 1
Bone 2
Bone 3
Bone 4
Average Control

mass (g)

0
-15 -10 -5 0

Strain

Bone 1
Bone 2
Bone 3
Bone 4
Average Frozen

Bone 1
Bone 2
Bone 3
Bone 4
Average Control
**RESULTS: YOUNG MODULUS**

YM = Stress/Strain
Ex: $50/-3.5 = -14.28$
RESULTS: YOUNG MODULUS

YM = stress/strain
Ex: 50/-1.25 = -40
RESULTS: STRAIN

**Ave Formalin Cat Strain**

- Mass (g)
- Strain (Pa)

**Formalin Cat Frozen Strain**

- Mass (g)
- Strain (Pa)
RESULT: CAT YOUNG MODULUS

YM = Stress/Strain
Ex: 50/-2 = -25

Formalin/Frozen YM

Formalin YM
**RESULT: SOFT TISSUE**

<table>
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<th>S3</th>
<th>S4</th>
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