

Innovative Usage of Waste and Applications of Theoretical Science

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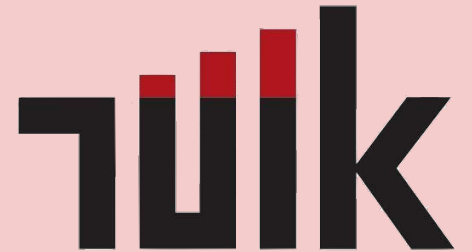
Waste Utilization

X 20



44

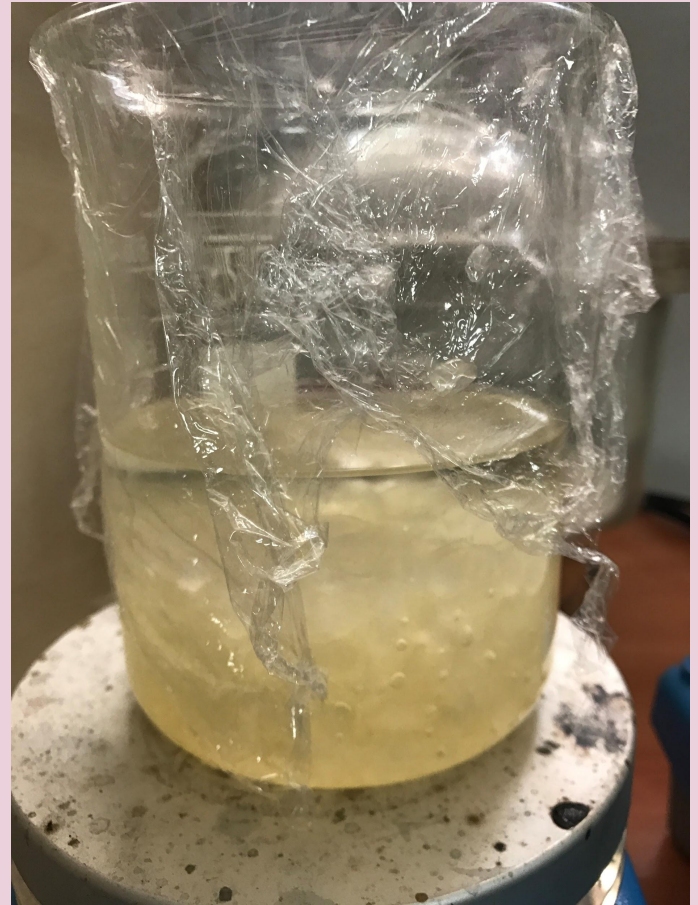
million



TURKISH STATISTICAL INSTITUTE

WHY

?



- **Horse mackerel – Avg. weight 500 – 800g**
- **5% NaCl solution**
- **4% NaOH solution**
- **Isobutyl alcohol**
- **5% EDTA**
- **Acetic Acid**

Step 1: removal of scales of Horse mackerel by hand

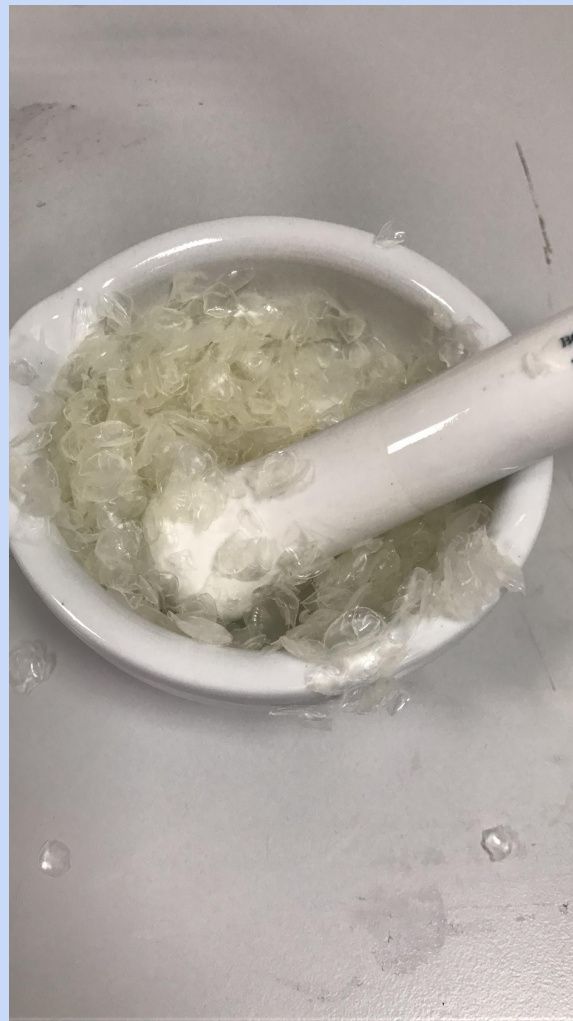
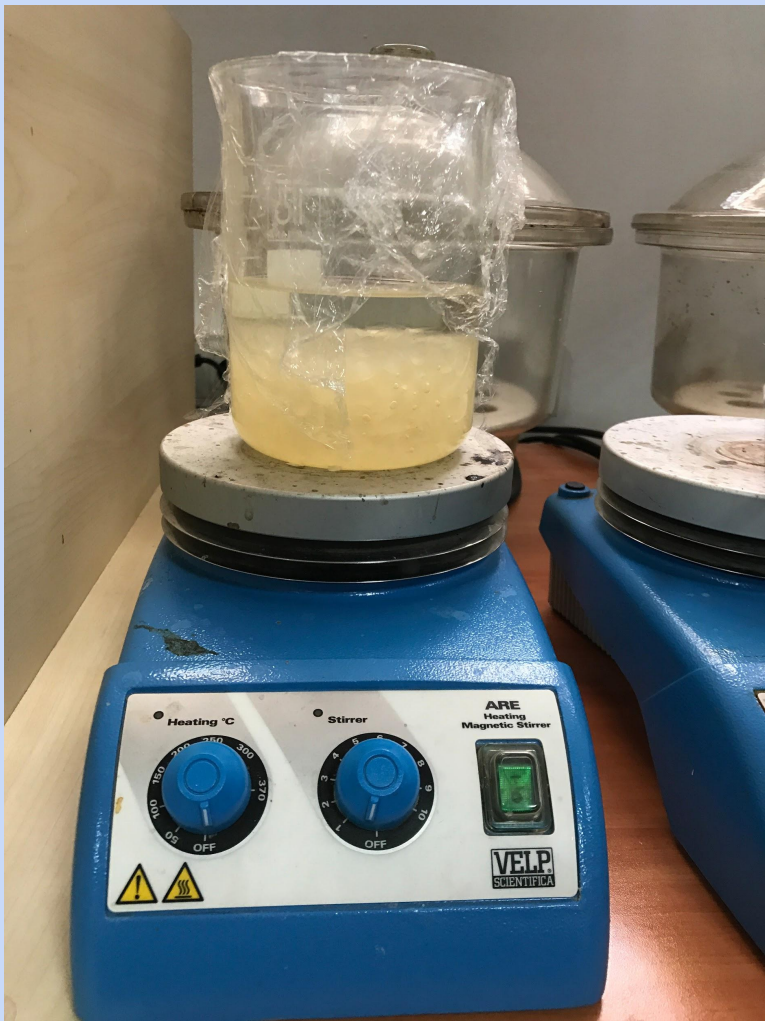
Step 2: Separation of non-collagen proteins (NaCl, NaOH)

Step 3: Removing lipids from the scales (isobutyl alcohol)

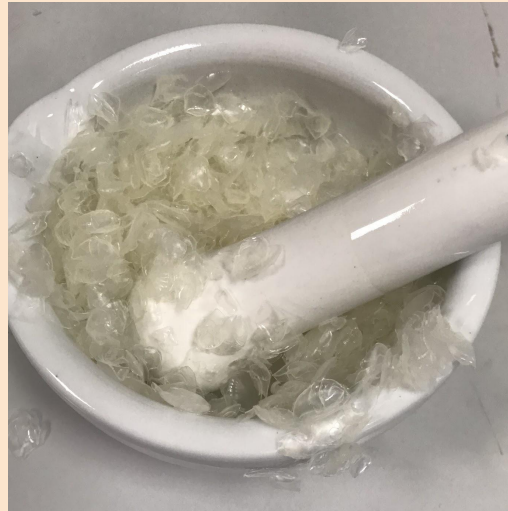
Step 4: De-mineralization process (12h, 2h, 2h, 1h)

Step 5: Heating and Cooling

Step 6: Crushing



Normal vs. Ours



Bloom Value (Gel Strength)

Gelling Temperature

326000

metric tons of gelatin **waste**

Bibliography

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