

## **TEXAS LEECHES®**

# **INTEGRATED PROTOCOL FOR HANDLING, STORAGE, MAINTENANCE, AND APPLICATION OF LEECHES**

**Technical reference and biological safety document.**

**This document does not constitute medical advice or replace professional clinical judgment.**

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### **1. PURPOSE OF THIS DOCUMENT**

**This protocol establishes general recommendations for the handling, storage, maintenance, and biological application of medicinal leeches (*Hirudo verbana*) in the following contexts:**

- Professional**
- Authorized clinical settings**
- Post-operative environments**
- Educational use**
- Biological research**
- Personal biohacking and recovery-oriented applications**

**This document is intended solely as an operational and biological safety reference.**

**It does not constitute mandatory medical guidance or therapeutic indication.**

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## **2. PRODUCT DESCRIPTION**

**Species:** Hirudo verbana

**Classification:** Live biological organism

**Condition:** Single-use biological product

**Supplier:** Texas Leeches®

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## **3. STORAGE AND MAINTENANCE PROTOCOL**

### **3.1 Water**

- **Use only chlorine-free bottled water:**
  - **Mineral water**
  - **Spring water**
  - **Commercial bottled water**
  
- **Never use tap water.**
  
- **Containers should only be filled halfway to allow adequate oxygen exchange.**

### **3.2 Container**

- **Use glass containers exclusively.**

- **Recommended sizes:**

- **½ gallon (2 L)**

- **1 gallon (4 L)**

**Cleaning:**

- **Rinse only with bottled water.**

- **Do not use:**

- **Soap**

- **Detergents**

- **Alcohol**

- **Chemical agents**

### **3.3 Ventilation and Closure**

- **Cover with lightly porous breathable fabric:**

- **Gauze**

- **Fine cloth**

- **Secure tightly with an elastic band or rubber band.**

**Purpose:**

- **Allow proper air exchange**
- **Prevent escape**
- **Maintain biological stability**

**3.4 Temperature and Storage**

**Ideal temperature:**

**4–8 °C (39–46 °F)**

**Recommended storage location:**

- **Dedicated refrigerator**
- **Biological cooler**

**Avoid:**

- **Freezing**
- **Heat exposure**
- **Direct sunlight**
- **Sudden temperature fluctuations**

**3.5 Operational Maintenance**

### **Water changes:**

- **Once per week**
- **Immediate replacement if:**
  - **Water becomes cloudy**
  - **Foul odor develops**
  - **A leech becomes inactive or dies**

### **Minimum inspection:**

- **At least once per week**

### **Verify:**

- **Movement**
  - **General condition**
  - **Water clarity**
  - **Biological activity**
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## **4. GENERAL HANDLING AND SAFETY**

- **Avoid unnecessary direct contact.**

- **Use:**
    - **Gloves**
    - **Soft forceps**
    - **Non-traumatic instruments**
  
  - **Do not expose leeches to:**
    - **Alcohol**
    - **Perfumes**
    - **Scented soaps**
    - **Chemical substances**
  
  - **Do not force detachment during feeding or attachment.**
  
  - **Immediately remove any inactive or deceased specimen.**
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## **5. SINGLE-USE AND BIOSECURITY**

**Medicinal leeches must be considered single-use biological organisms.**

**Recommendations:**

- **Never reuse a leech.**
- **Treat used leeches as biological waste.**

- **Keep used and unused specimens separated at all times.**
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## **6. POST-OPERATIVE CLINICAL PROTOCOL**

### **Application in venous flap congestion**

#### **6.1 Pre-Application Clinical Evaluation**

**Confirm signs consistent with venous congestion:**

- **Dark discoloration**
- **Slow capillary refill**
- **Visible congestion**
- **Prominent veins**

**Contraindications:**

- **Arterial insufficiency**
- **Pale or non-perfused flap**
- **Hemophilia**
- **Severe anemia**
- **Active local infection**

#### **6.2 Site Preparation**

- **Clean the area with sterile saline solution.**
- **Avoid alcohol or scented soaps.**

**Clinical considerations:**

- **Obtain informed consent.**
- **Maintain professional supervision.**
- **Consider antibiotic prophylaxis according to medical judgment.**

### **6.3 Application**

**Placement:**

**Apply directly to the most congested areas.**

**Recommended quantity:**

**1–3 leeches per session depending on severity.**

**Approximate duration:**

**30–60 minutes.**

**Leeches should detach naturally.**

**Important:**

**Never force removal.**

## **6.4 Monitoring**

**During application monitor:**

- **Tissue color**
- **Capillary refill**
- **Bleeding**
- **Tissue response**

**If excessive bleeding occurs outside the target area:**

- **Apply gentle pressure using sterile gauze.**

## **6.5 Post-Application Care**

- **Cover with sterile gauze.**
- **Allow controlled passive drainage.**
- **Clean with saline solution if necessary.**
- **Topical heparin only under clinical supervision.**

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## **7. PERSONAL USE AND BIOHACKING CONTEXT**

## **Scope:**

**Some individuals use *Hirudo verbana* in personal contexts related to:**

- **Biological recovery**
- **Circulatory support**
- **Experimental protocols**
- **Biohacking**
- **Regenerative optimization**

## **General recommendations:**

- **Maintain strict hygiene measures.**
- **Never reuse specimens.**
- **Avoid application without basic anatomical knowledge.**
- **Discontinue use if adverse reactions occur.**
- **Seek professional supervision when appropriate.**

## **Not recommended for:**

- **Coagulation disorders**
- **Anticoagulant use**
- **Immunosuppression**
- **Active infections**
- **Pregnancy without medical supervision**

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## **8. BIOLOGICAL DISPOSAL**

### **Inactivation:**

- **Submerge used leeches in 70% alcohol.**

### **Disposal:**

- **Dispose according to:**
    - **Local regulations**
    - **Biological waste protocols**
    - **Institutional compliance standards**
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## **9. LEGAL AND MEDICAL DISCLAIMER**

**Hirudotherapy is considered a complementary practice and does not replace professional medical treatment.**

**All clinical applications should be performed under professional supervision and according to applicable local regulations.**

**Texas Leeches® is not responsible for:**

- **Misuse**
  - **Improper handling**
  - **Applications outside professional judgment**
  - **Failure to follow biological safety protocols**
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## **10. PROVIDER INFORMATION**

**Texas Leeches®**

**Supplier of Hirudo verbana**

**Live biological product**

**[www.texasleeches.com](http://www.texasleeches.com)**