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Extracorporeal Shock Wave Therapy and Alveolar Bone regeneration in Rats

Funded By: Bioden Technologies & Tissue Regeneration Technologies.

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The mechanisms of periodontal diseases are complex, in most part due to the complex microbial community in the oral cavity consisting of numerous bacteria, fungi, and viruses at disease sites. A predominant bacteria identified in a majority of adult periodontitis patients is *Porphyromonas gingivalis*. Our long term goal is to understand how this bacteria induces gingival inflammation and destruction of alveolar bone that supports the teeth. Specifically, we will assess the virulence of bacteria using a rat model by measuring the alveolar bone loss supporting the teeth after infection. Extracorporeal shock wave therapy (ESWT) has been suggested as a treatment alternative for several different conditions (diabetes wound healing and bone regeneration). ESWT (VetWave 140®, MTS) are used extensively in Veterinary Medicine (Equine) as an effective treatment for bone fractures and back problems. ESWT promote healing of collagenase-induced achilles tendinitis and ESWTs elicit a dose-dependent effect on the healing of femoral segmental defects in rats. The effect of ESWT in periodontal bone regeneration is not known. The objective of this study is to assess the effectiveness of ESWT in alveolar bone regeneration in *P. gingivalis*-induced periodontal disease using rat model. If successful, the benefits of this study will enhance therapeutic intervention of periodontal disease, thus providing a potential alternative to the use of antibiotics.

PERFORMANCE SITE(S) (*organization, city, state*)

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Lexington, Kentucky.

KEY PERSONNEL. See instructions. *Use continuation pages as needed* to provide the required information in the format shown below. Start with Principal Investigator. List all other key personnel in alphabetical order, last name first.

| Name | Organization | Role on Project |
|-----------------------|--------------|------------------------|
| Lakshmyya Kesavalu | UK COD | Principal Investigator |
| John Novak | UK COD | Co-Investigator |
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Disclosure Permission Statement. Applicable to SBIR/STTR Only. See instructions.
 Yes No

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