appropriate mechanical and permeability characteristics of the normal tissue is critical to the formulation and delivery of therapeutic compounds. Current in-vitro organotypic models of keratinized stratified tissue are highly variable and do not reproduce the barrier properties of the parent tissue. Therefore, there is a need for a novel reproducible organotypic model (OM). OM differentiated from human embryonic stem cells (hESCs) holds great potential for future applications.

**Objectives:** To develop a novel OM from hESCs for the future research and clinical application.

**Methods:** OM was generated on polycarbonate culture inserts. For the construction of OM, hESCs derived fibroblast (H9-ebF) were seeded with collagen I in the dermal compartment. hESCs derived keratinocyte (H9-KerT) were then seeded in the epidermal compartment. Cultures were kept in FAD Medium supplemented with 1.5 mmol/L calcium chloride and 50 lg/mL ascorbic acid at the air-liquid interface for 10-15 days. Characterization of the OM was done by immunofluorescence staining.

**Results:** Preliminary results showed the formation of stratified keratinized multilayer epithelium.

**Conclusion:** This study brings a novel knowledge that hESCs derived reproducible invtro OM can be used for permeability testing with the minimum use of xenogenic and allogenic sources.

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**SD-022**

**ID:** 153382

**RESPONSE OF DIFFERENT SKELETAL STRUCTURES TO OVARIECTOMY: A RAT MODEL**

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**Objectives:** The ovariectomy (OVX) induced bone loss in rat has been widely used as an ideal model to investigate the mechanism and reconstruction of osteoporotic bone. The response of different skeletal structures to OVX is crucial for the bone loss related study but has not been fully investigated. This study aims to assess the quantitative and morphological changes of all the important bone structures using an OVX induced rat model.

**Methods:** Eighteen mature (age 24 weeks) female Sprague-Dawley rats were randomly assigned to OVX group (n=9) and sham operation group (n=9). Three animals in each group were sacrificed at week 2, week 4 and week 12 respectively. Three intact normal rats were sacrificed at week 0 as baseline. Bone samples of occipital bone, parietal bone, maxillary, mandible, ulna, humerus, proximal tibia, femoral neck, ilium and lumbar vertebrae were collected and subjected to micro-computed tomography (micro-CT) examination. Quantitative analysis and the 3D morphological reconstruction were performed to evaluate the micro-trabeculae.

**Results:** Different skeletal structures showed varied responses to OVX. Bone loss was observed in all the bone structures at different time points with different levels. Obvious bone loss was observed as early as week 4 in proximal tibia and femoral neck, while dynamic bone structure changes in the other skeletal sites were observed at a later stage of week 12. **Conclusion:** Different skeletal structures demonstrated various responses to OVX in the Sprague-Dawley rat model. The present study may provide valuable index for the selection of appropriate anatomical structure in osteoporotic study.

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**SD-023**

**ID:** 153240

**PERCENTAGE INHIBITION OF DIAMETER GROWTH OF EUGENOL AGAINST CANDIDA ALBICANS**

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**Introduction:** Candida albicans is the predominant species of oral candidiasis. Eugenol (4-allyl-2-methoxyphenol) extract from cloves is known to exhibit antifungal activity towards several microorganisms, but very little information is known about its antifungal action against C. albicans.
**Objectives:** This study aims to determine the susceptibility of *C. albicans* against eugenol extract and to obtain the Percentage Inhibition of Diameter Growth exhibited by eugenol.

**Methods:** The disc diffusion test using Kirby-Bauer method was used to determine the antifungal activity of eugenol extract at various concentrations (1%, 0.5%, 0.4%, 0.3%, 0.2%, 0.1%, 0.05% and 0.0025% v/v). The MIC and the MFC analysis have been carried out using microbroth dilution method. Results were recorded and PIDG values against Amphotericin B were calculated.

**Results:** It was found that the MIC and MFC of eugenol extract towards *C. albicans* were similar, that is of 1% v/v. Except for 1% v/v of eugenol extract, all other concentrations exhibit low antifungal effects which were indicated by the negative values of PIDGs towards *C. albicans*. These results showed the sub-MIC concentrations of eugenol has low antifungal influence which were reflected by the growth inhibition zones compared to Amphotericin B. In contrast, the PIDG value of 1% v/v eugenol was found to outstrip Amphotericin B by 19.05%; suggesting that *C. albicans* is more susceptible to 1% v/v of eugenol compared to 20µg/ml Amphotericin B.

**Conclusion:** Eugenol extract has exhibited good antifungal activity towards *C. albicans*, thus could significantly contribute to the development of an alternative antifungal agent of a natural product.

**SD 024**

**ID: 153296**

**ORAL INTERVENTIONS ON OPPORTUNISTIC PATHOGENS IN PATIENTS FOLLOWING ACUTE STROKE**

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**Introduction:** Oral opportunistic pathogens are highly prevalent following acute stroke, and are associated with post-stroke pneumonia.

**Objectives:** Randomized clinical trial to assess the effectiveness of oral hygiene interventions (oral hygiene instruction, chlorhexidine mouthrinse, assisted brushing) on oral opportunistic pathogens including *Staphylococcus aureus*, aerobic and facultatively anaerobic Gram negative bacilli (AGNB), and yeasts.

**Methods:** 81 stroke survivors undergoing hospital-based rehabilitation were block randomized to receive either (1) oral hygiene instruction (OHI) only, (2) OHI and 0.2% chlorhexidine (CHX) mouthrinse (twice daily), or (3) OHI, 0.2% CHX mouthrinse (twice daily), and assisted brushing (twice weekly). Concentrated oral rinse and imprint samples were obtained from patients upon admission to acute stroke rehabilitation and prior to hospital discharge (3 weeks later) for detection of *S. aureus*, AGNB, and yeasts. Patients were monitored for development of infectious complications. AGNB were identified with API20E and API20NE. *S. aureus* and yeasts were identified with StaphySlides Plus and ID32C, respectively.

**Results:** Almost three quarters (72.8%) of patients harbored oral AGNB at baseline. Over half of the patients had detectable *S. aureus* (56.8%) and yeasts (59.3%). Percentage frequencies and viable counts of pathogens remained relatively stable during the course of the clinical trial, and no significant differences were observed between groups. No patients developed pneumonia during the intervention period.

**Conclusion:** There was no significant difference in the effectiveness of the three different oral hygiene interventions in combating oral opportunistic pathogens.