

# Nile Tilapia Skin, *Oreochromis Niloticus*. An Alternative Treatment for Second Degree Burns

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## Introduction

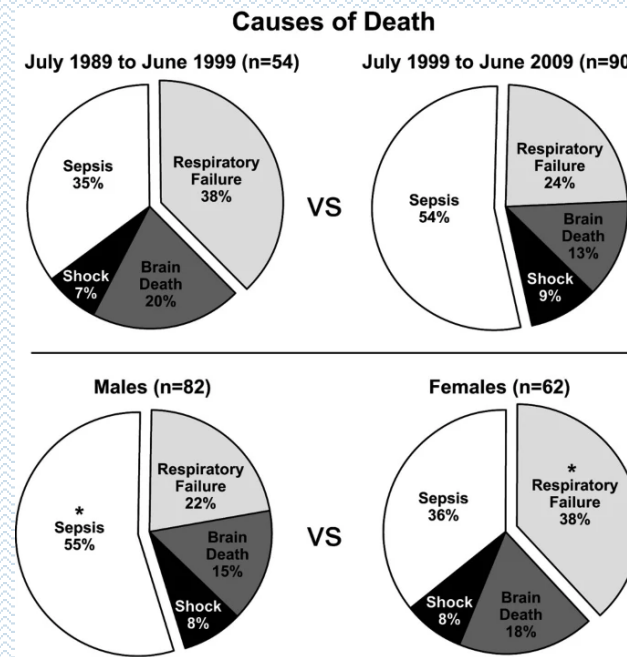
- Burns are a major cause of injury worldwide, injuring roughly 11 million people a year, with 180,000 deaths a year (Ciornei et al, 2019)
- Treatments for burns are mostly supportive, and rely on the body's own healing process
- A notable exception is severe and directly life-threatening burns, wherein an autograft of skin is commonly used to allow the body to heal itself despite incredibly damaged tissue
- Current treatments are adequate but stand much to gain (See Fig. 1)
- Second degree burns are the best area to focus on improving treatment, based on mortality vs. treatment aggressiveness involved with the lesions
- Xenografts have shown promising results in prior works, providing a potential new method for treating these patients

**Hypothesis/Abstract** We hypothesize the use of *Oreochromis Niloticus* skin on 2nd degree burn victims will reduce the healing time when compared to the use of bandages and associated topical medications within one year.

## Methods

- First step was formulating a review question: would the use of tilapia skin on second degree burn victims reduce the healing time when compared to the use of bandages and associated topical medications within one year?
- This question then led the group to find previous articles which answered or had pertaining information to the same research question
- The group wrote a protocol to provide an objective and reproducible methodology as well as devise a search strategy in order to find relevant trials all in order to prepare the research and retrieve the appropriate information for the systematic review
- After devising a search strategy, the search was conducted as well as the removal of irrelevant trials found along the way
- Once studies were selected, the extraction of the outcomes was retrieved and evaluated. The data extracted from the studies selected was converted into common representative data and statistically combined and analyzed in order to produce the final systematic review

Figure 1



## Conclusion

In conclusion, the research done thus far has proven Tilapia skin to be effective and safe when used to treat burn patients. When compared to current methods of treatment, Tilapia skin has a faster mechanism of action, resulting in earlier completion of the re-epithelialization process and allowing for a quicker, less costly stay at the hospital. These promising results must be received with caution however, as further research and human trials are required to ensure the safety and efficacy of this treatment method, preferably with larger study populations.

## Results

Source	Title	No. of participants	Model Used	Age Range	Follow up	Year Published
Ge et al.	Comprehensive Assessment of Nile Tilapia Skin ( <i>Oreochromis Niloticus</i> ) Collagen Hydrogels for Wound Dressings	45	Rat	N/A	Weekly	2020
Hu et al.	Marine Collagen Peptides from the Skin of Nile Tilapia ( <i>Oreochromis Niloticus</i> ): Characterization and Wound Healing Evaluation	16	Rabbit	N/A	Daily	2017
Lima-Junior et al.	Innovative Burn Treatment Using Tilapia Skin as a Xenograft: A Phase II Randomized Controlled Trial	62	Human	18-50 (adult)	Weekly	2020
Lima-Junior et al.	Pediatric burn treatment using Tilapia Skin as xenograft for superficial partial thickness wounds: A pilot study	30	Human	2-12 (children)	Weekly	2020

## References

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