

Systematic or Scoping review? Example of the Photoactivated Chromophore for Keratitis-Corneal Cross-linking (PACK-CXL) studies.

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Scoping Review

It is a type of knowledge synthesis with an established methodology (1-3), which is recently gaining popularity.

	Systematik Review	Scoping Review
Research question	narrow (e.g., PICO)	broad "scope"
Approach	qualitative	descriptive
Risk of bias assessment	mandatory	typically, not included

Table.1: Key differences between systematic reviews and scoping reviews.

Infectious Keratitis

- Caused by variety of pathogens and may result in vision loss.
- Treatment aims to eliminate pathogens and stop corneal dissolution
- Treatment success depends on the effective medications, i.e., antibiotics
- Growing antibiotic resistance reduces effectivity of the standard treatment

Non-antibiotic-based alternatives are needed.

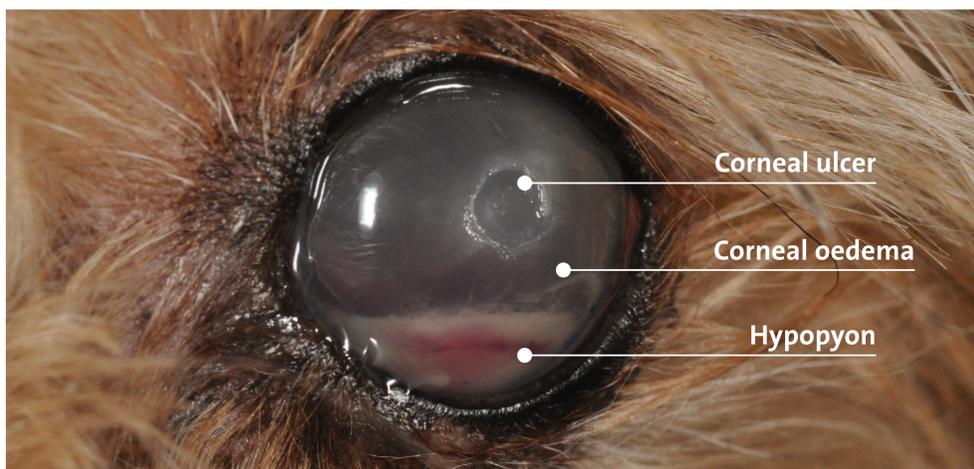


Fig.1: Corneal ulcer in a dog.

PACK-CXL

- A type of photodynamic therapy initially used to treat corneal ectasia.
- Therapeutic effects: antimicrobial & reduction of corneal dissolution
- Humans with infectious keratitis were first treated with PACK-CXL in 2008

A number of PACK-CXL protocols, with different energy and chromophores, have been applied, with many experimental protocols and measured endpoints used to determine PACK-CXL therapeutic effects in pre-clinical studies.

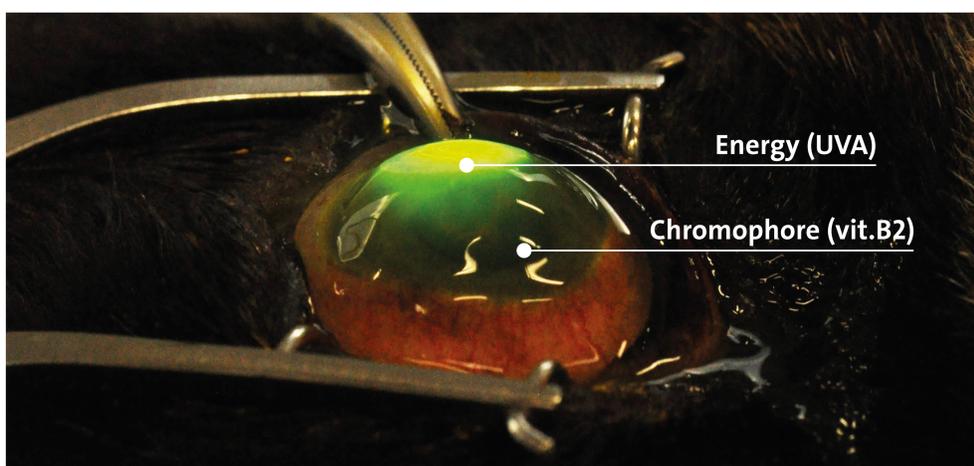


Fig.2: Corneal ulcer in cat treated with PACK-CXL.

Motivations

- The lack of homogeneous endpoints in pre-clinical PACK-CXL studies preclude a systematic review
- Scoping review allows for a comprehensive description of PACK-CXL pre-clinical studies

Example of how to design a scoping review based on our protocol submitted to BMC Systematic Reviews.

Scoping Review Protocol

1 Identification of the research questions and objectives.

- Which PACK-CXL protocol modifications have been investigated?
- Which pathogens were tested?
- Which types of study design and experimental settings were used in pre-clinical animal studies and in in vitro studies?
- Which endpoints were used to assess PACK-CXL treatment effects?

2 Identification of relevant published studies and conference abstracts.

We include peer-reviewed publications and conference abstract, published after 2000, in all available languages.

3 Selection of studies and conference abstracts.

Two reviewers in parallel screen the publications title and abstract. The article is included if the answer to all following questions is "yes".

- Does this study involve the use of a treatment method based on the combination of a chromophore and energy?
- Are any of the study findings related to PACK-CXL treatment efficacy?
- Can this study be considered pre-clinical (in vivo animal: clinical or laboratory-based, or in vitro)?

4 Extraction and charting of evidence and data.

We collect extracted items in seven blocks: 1) research question 2) characteristics of PACK-CXL protocol 3) pathogens 4) study design/experimental setting 5) animal species 6) measured endpoints 7) publication-related information.

5 Collation, summation, and presentation of results.

Search results will be presented in a PRISMA flow diagram (4). Along with a narrative summary that aligns with this review's research questions, we will present the data in tables. Results will be mapped separately for the animal and in vitro studies.

Preliminary Results

Records included through database search n= 1667

Records after duplicates removal n= 1641

Records excluded n= 1444, including:

- not relevant n=917
- published before year 2000 n=243

Fool text articles assessed for eligibility n= 197

References

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4. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169(7):467-73.