

Alternatives for hide preservation: salt load decrease in slaughterhouses and tanneries

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50% to 100% chloride sodium on the raw weight of bovine hides

high salinity in slaughterhouse wastewater and soaking water

But treatment plants unable to remove salt

Rejects harming ecosystems

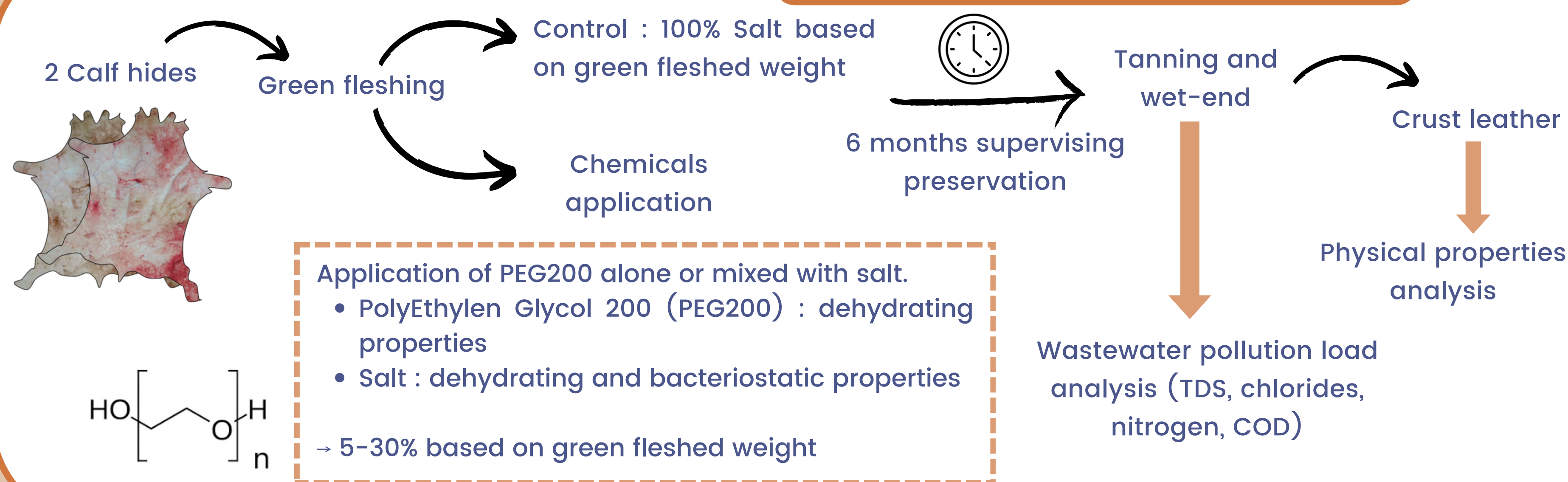
Expansive and energy-consuming facilities
(ex : reverse osmosis system)

Decrease of salt load
for preservation

This study aims to find alternatives to hide salting reaching the following objectives.

- 1 Decrease or removal of salt by a chemical or physical process
- 2 Grain and handle leather quality similar to a salted hide
- 3 6-months preservation at least
- 4 Low impact on wastewater

Material and Methods



3 sets of trials

- **PEG200 application.** Tested on flesh side or inside a drum during several hours, with or without salt.
- **Green fleshing.** Comparison of weight loss, salt load and preservation efficiency.
- **Quantities of PEG200 and Salt.** Studying the complementary of dehydrating and bacteriostatic properties.

Results and Discussion

PEG200 Application

10, 20, 30% PEG200 on raw weight

Flesh side

Drum (4h rotation)

→ Flesh side application shows a burnt grain. Drum application is less damaging to grain. Damages increase with the quantity of PEG200.

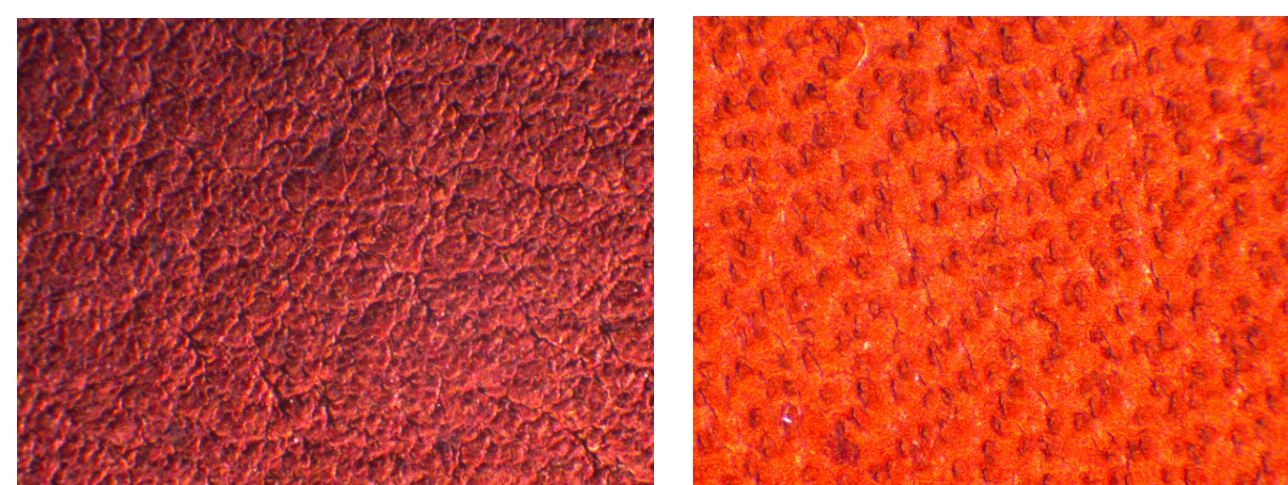


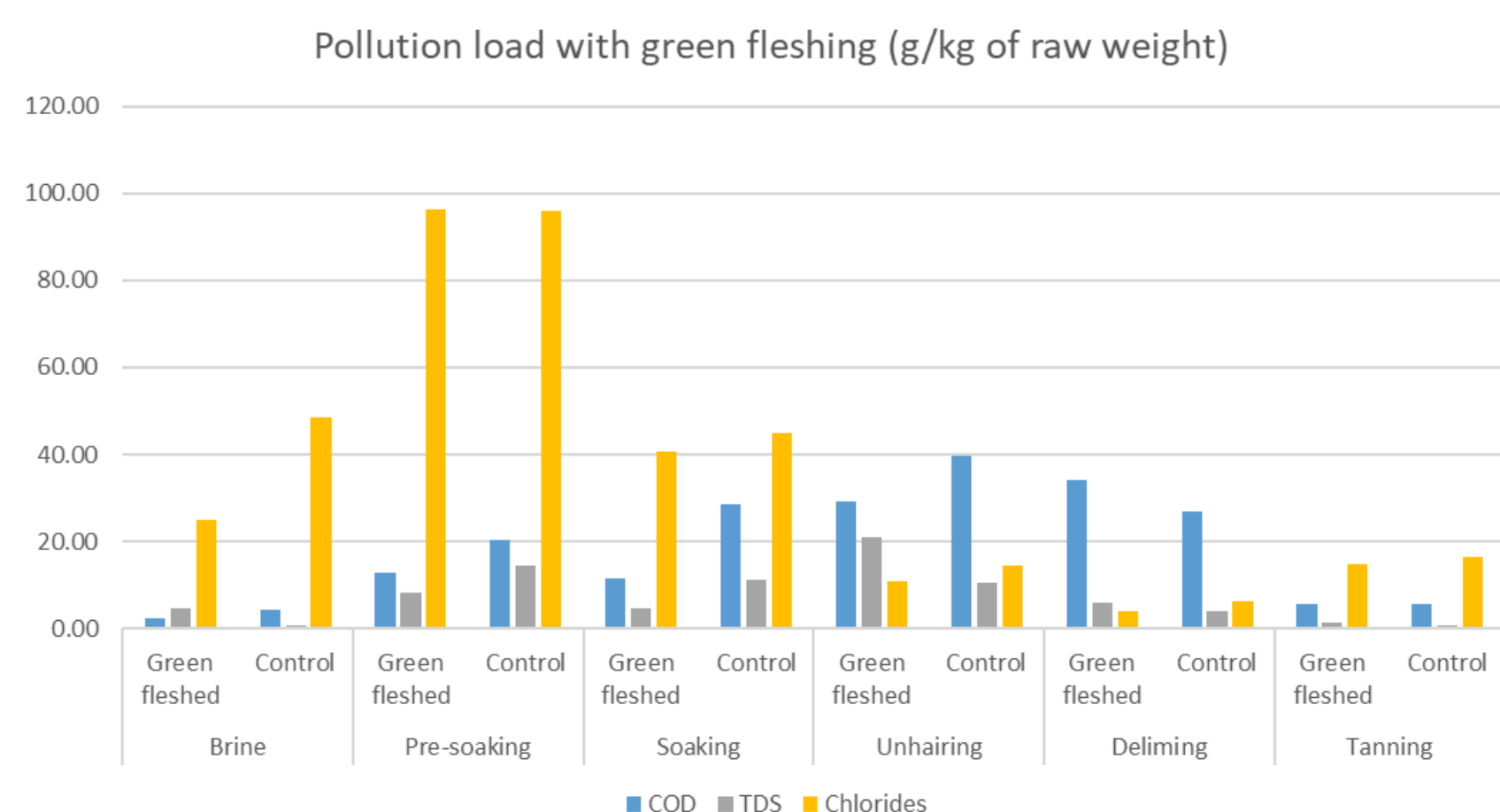
Figure 1 : 30% PEG200 - flesh side (left) and 15% PEG200 and 15% salt - drum (right)

A minimal quantity of salt helps maintain the regularity of the grain.

Green fleshing

10 - 20% weight loss compared to raw weight

10 - 20% salt load decrease for 100% calf hide salting



Lower wastewater loads and more efficient preservation as no grease or flesh prevent the chemicals action.

Green fleshing optimizes

- Hide transport
- Grease valorisation
- Drum filling
- Wastewater treatment

Green fleshing +

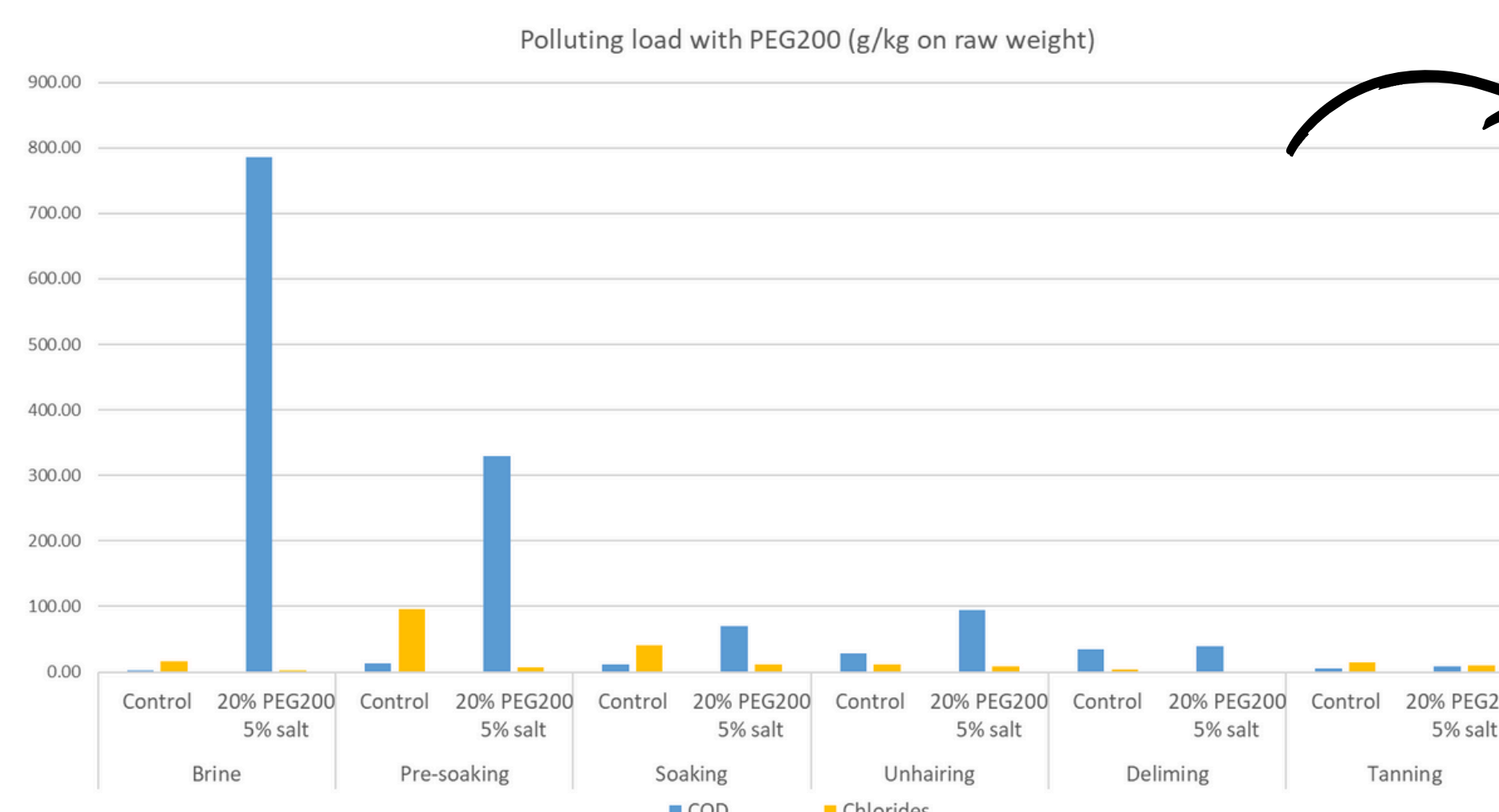
PEG200 (drum application)	15%	10%	10%	20%
Salt (flesh side)	15%	10%	5%	5%

- 6 months preservation reached
- Damage increase with PEG200 quantity
- Grain damage for salt quantity lower than 10%

Optimal quantities

- 10%-15% salt
- 10-15% PEG200

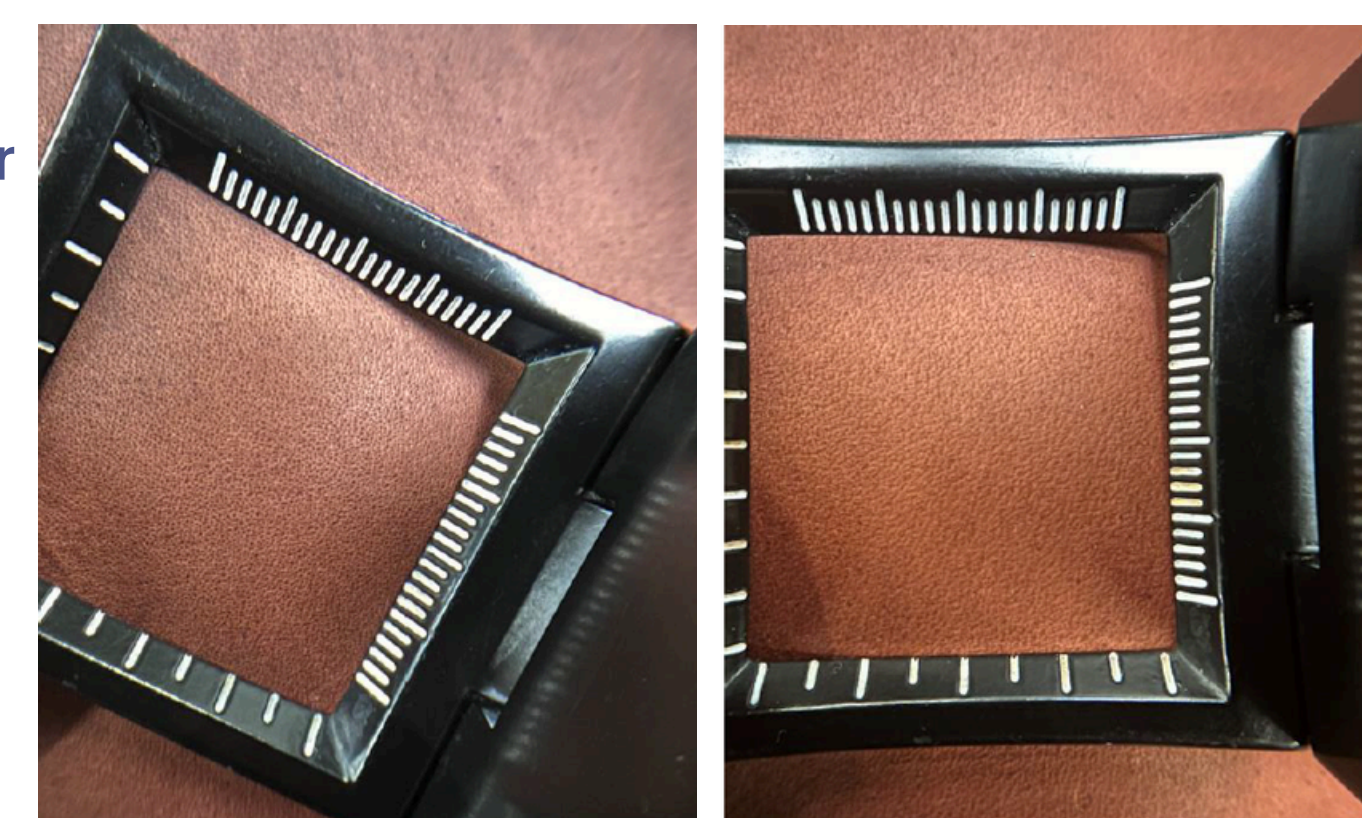
Figure 3 : Control - 100% salt (left) and 15% PEG200 and 15% salt (right)



For 15% PEG200 and 15% salt, analysis of tear strength, abrasion, elongation until break and grain damage

similar results as control hide

Figure 2 : Fleshed hide with 5% salt and 20% PEG200



Lower salt concentration but higher COD. Without green fleshing, Hard DCO was found.

Green fleshing is thus essential with PEG200 preservation.

Conclusion

Decreasing salt load in wastewater ?

- green fleshing the hides (10-20% salt decrease) and optimization of preservation efficiency
- Salt and PEG200 on green fleshed hides

Future of the study ?

- **Scaling up** with 15% salt and 10% PEG200 on 10 green fleshed hides.
- Testing **super-absorbent**. Working as sponges by absorbing water, first trials show very low salinity and slight damaged grain.
- **Drying** hides by using a closed system.