



Fibres as reinforcement of alkali-activated materials: Comparative study

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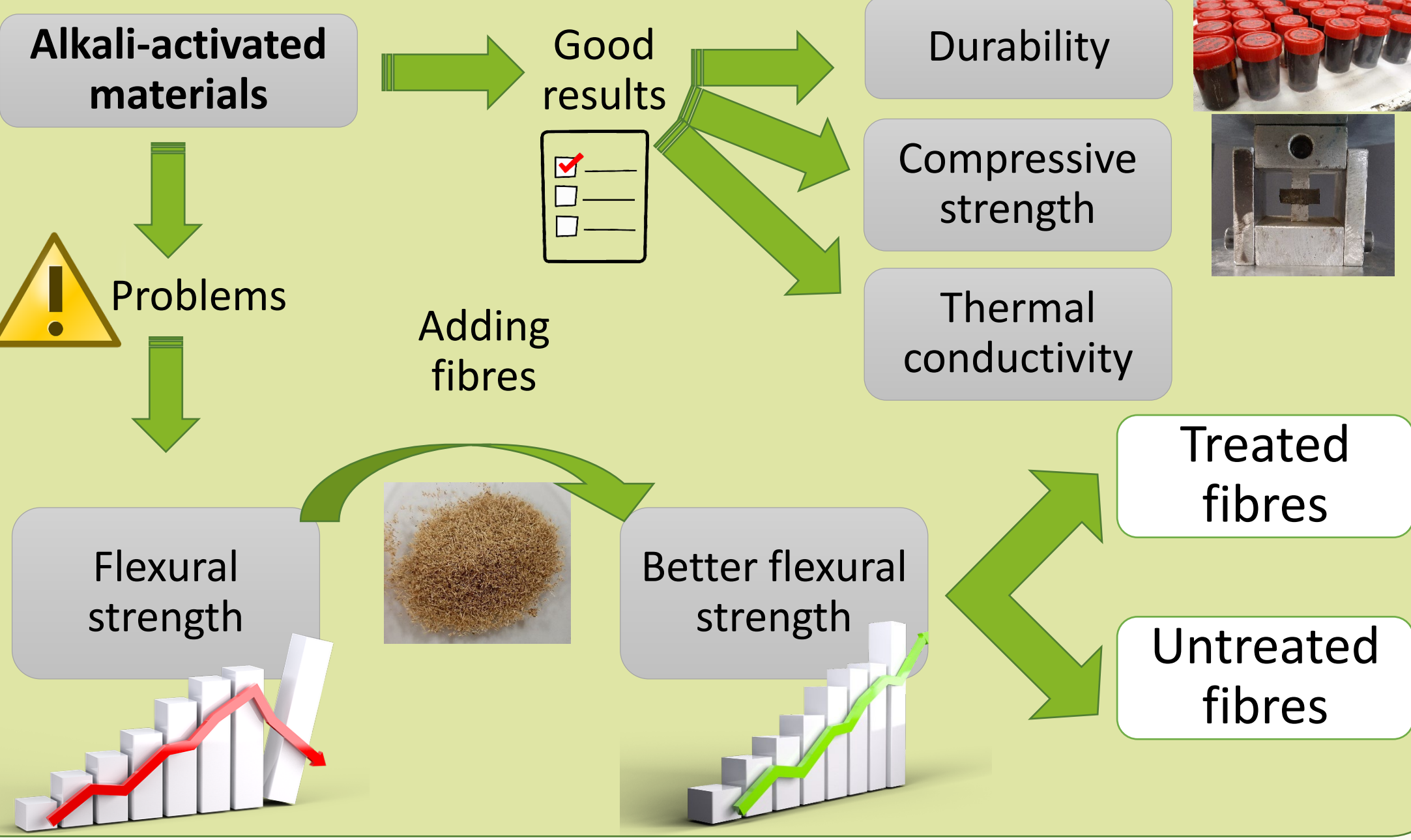
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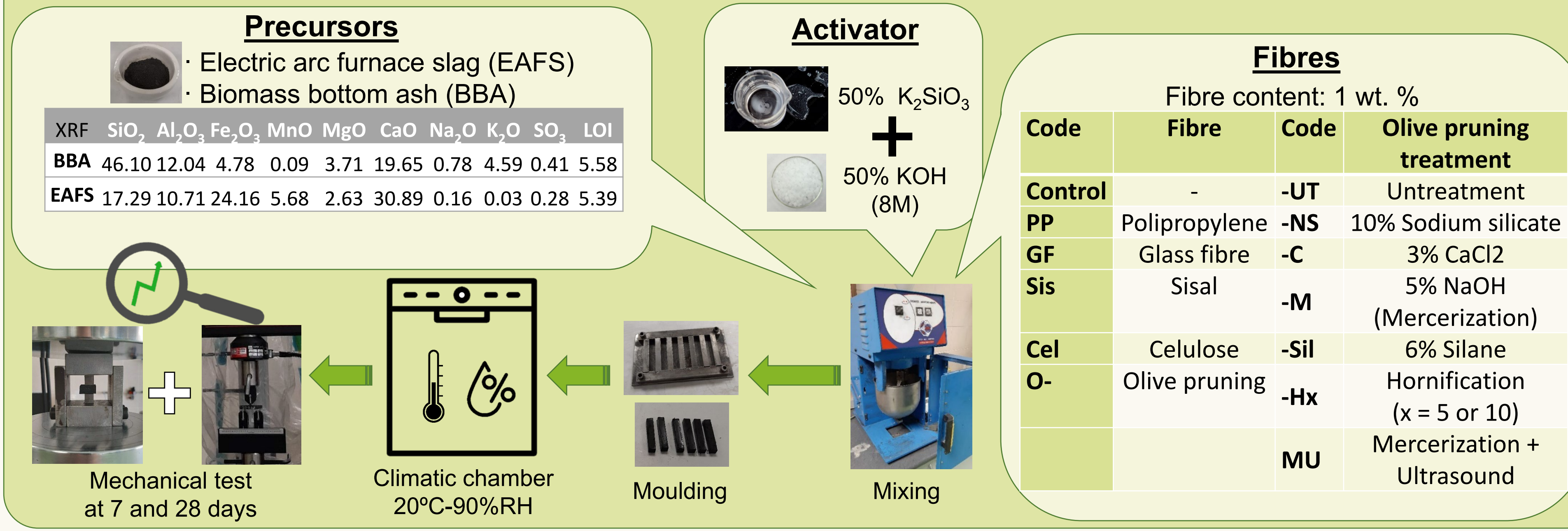
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Introduction



Manufacture of composites



- Step 1**
 Treatment solutions:
 · 10% sodium silicate (Na₂SiO₃)
 · 3% calcium chloride (CaCl₂)
 · 5% mercerization (NaOH)
 · 6% silane
 · Hornification
 · Mercer. + ultrasound

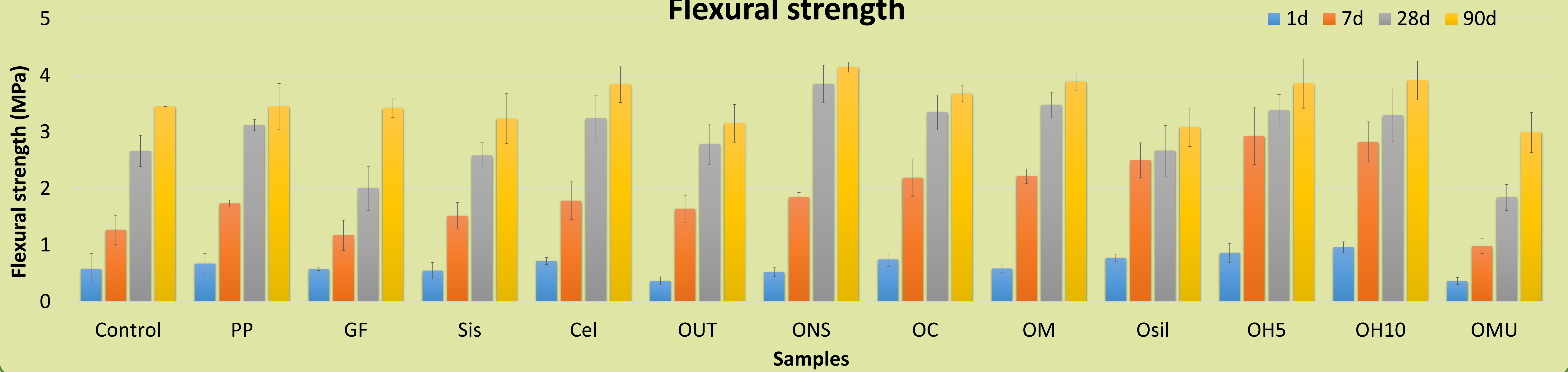
Fibre treatments

- Step 2**
 · Immerse fibres in solution (60min. Stirring)
 · Ultrasound (if required)
 · Drain fibres

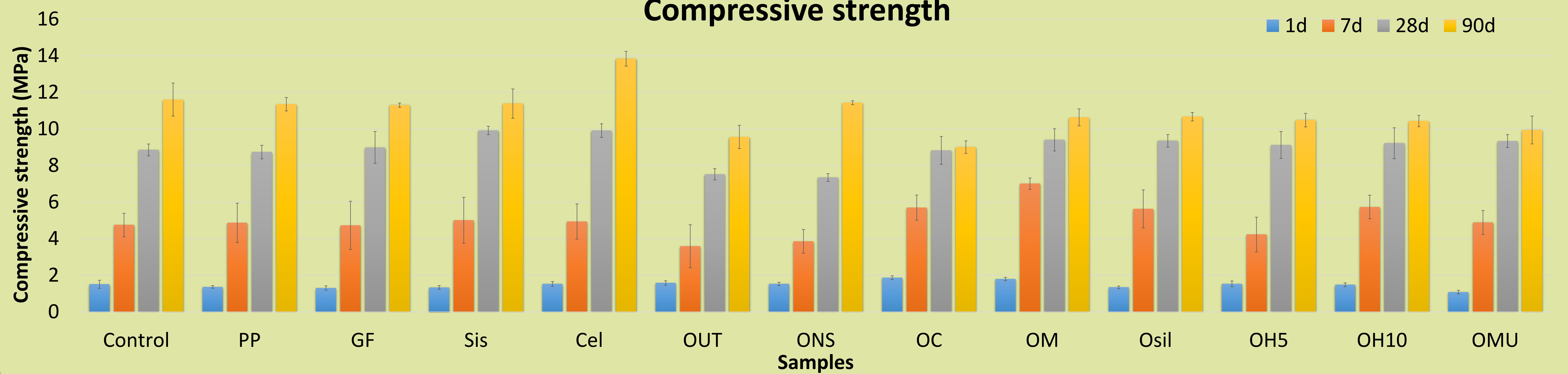
- Step 3**
 · Wash with water (until neutral pH)
 · Dry fibres

RESULTS

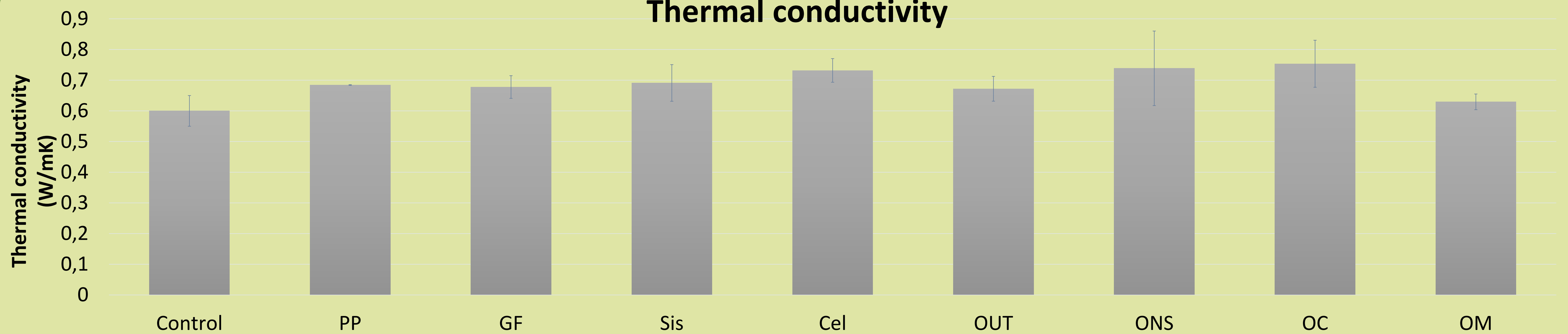
Flexural strength



Compressive strength



Thermal conductivity



Conclusions

- Natural fibres helped to develop better flexural strength than rest of fibres.
 - Olive pruning fibres shown best values when they were treated before.
 - A solution of 10 wt. % of Na₂SiO₃ was the best treatment. Mercerization and hornification also obtained great results.
 - As a consequence of fibres added, compressive strength values decreased. This decrease was considered admissible, except with CaCl₂ solution and untreated fibres.
 - Thermal conductivity increased, due to fibre adding. Mercerization and untreated fibres obtained nearest values to Control paste.
- The effect of olive pruning fibres as reinforcement have been demonstrated.

Acknowledgements

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