

Background

Common industrial problems related with powder flow properties are:

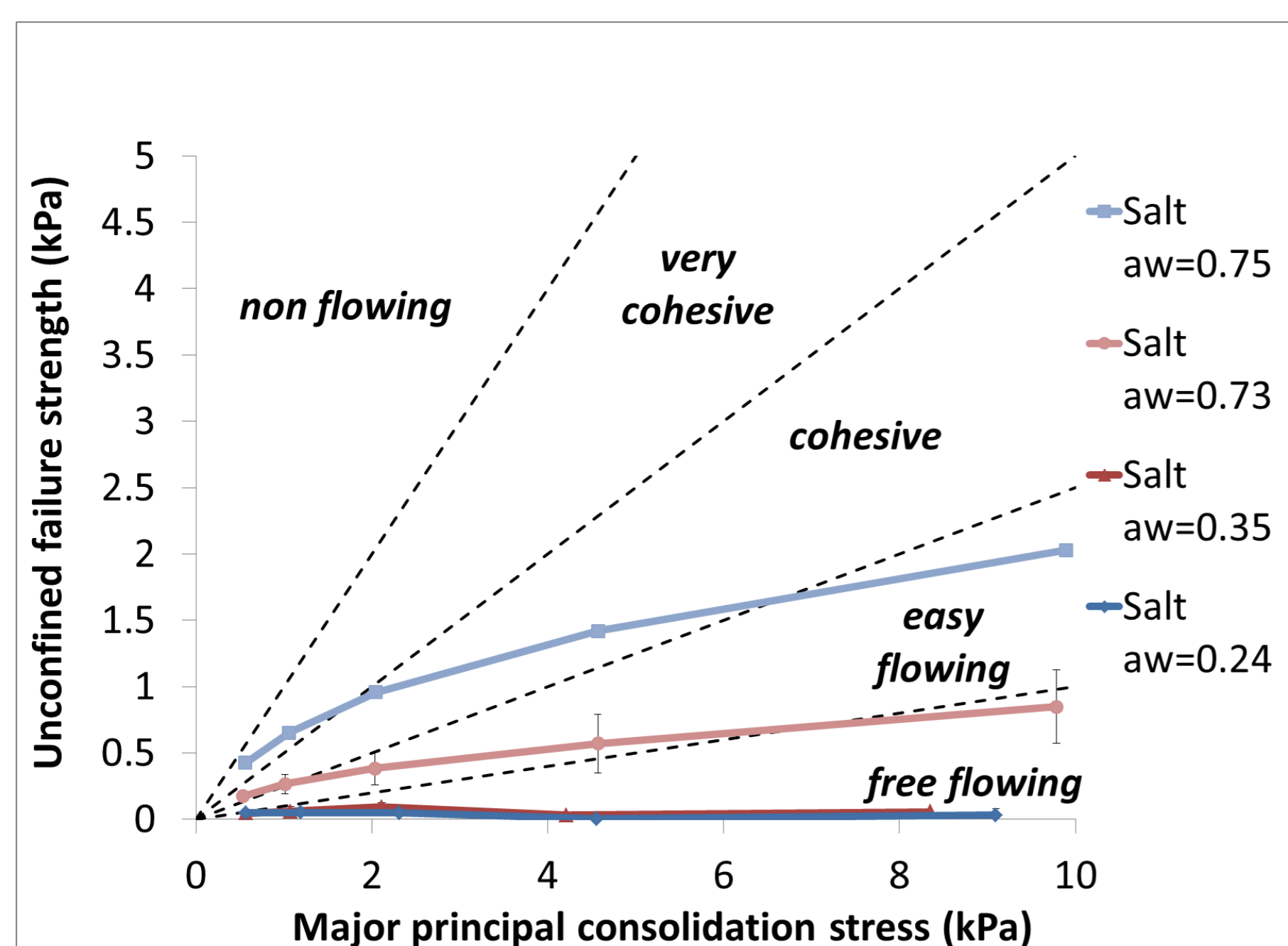
- ✓ Their failure to discharge reliably from bins, silos and hoppers
- ✓ Their insufficient or unpredictable flow in feeders, dosing and packing machines.
- ✓ Variations in mixture homogeneity which in turn may lead to pack weight, performance, sensory properties and quality differentiations of the final products.

Materials and Methods

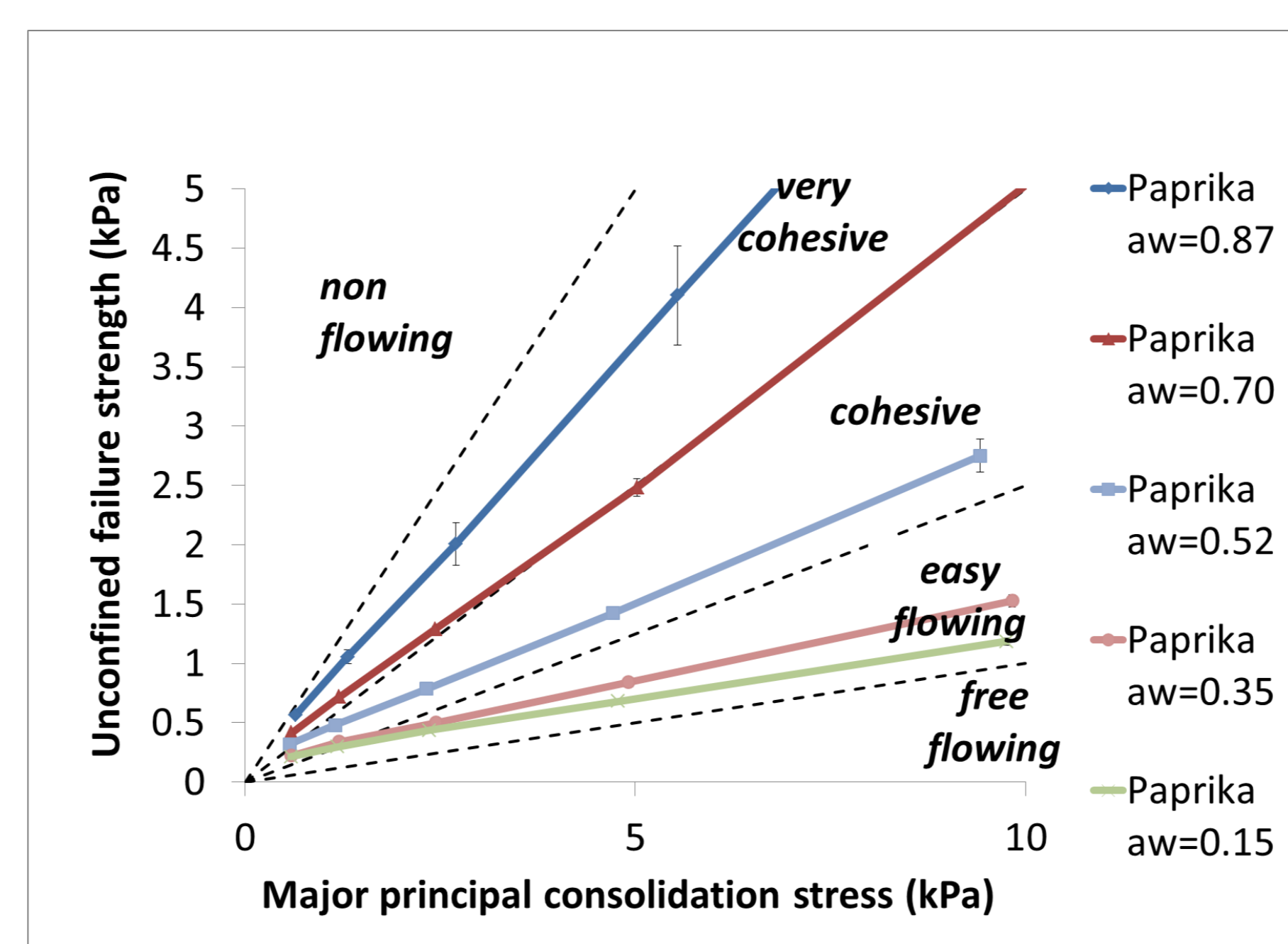
The flow properties of paprika, oregano and salt and their mixes were determined with the use of a Powder Flow Tester (PFT - Brookfield Engineering Laboratories Inc.) which complies with the test procedure ASTM D6128 using the annular and Jenike shear tests techniques.



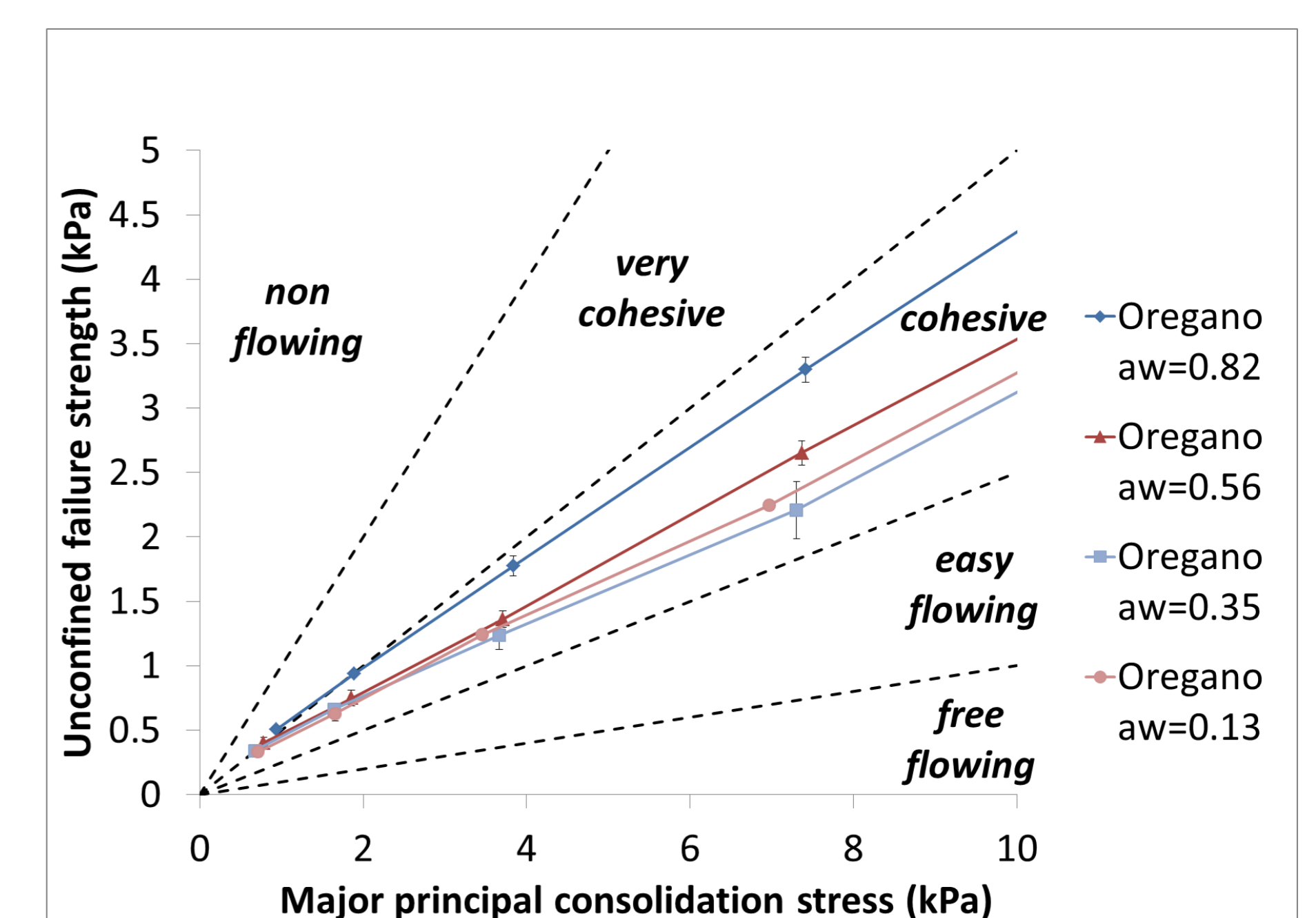
Results



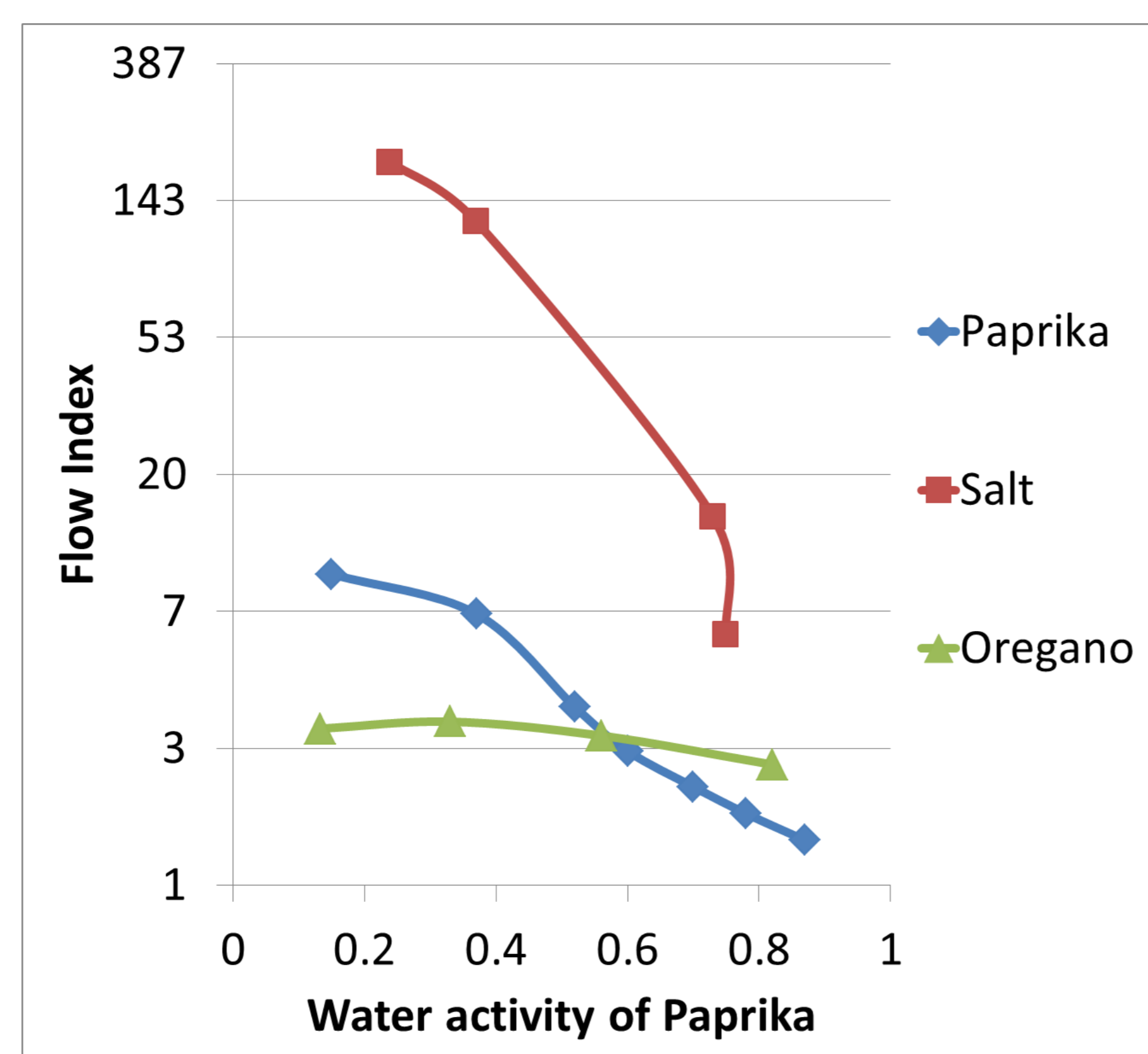
Flow function plot of salt for different a_w



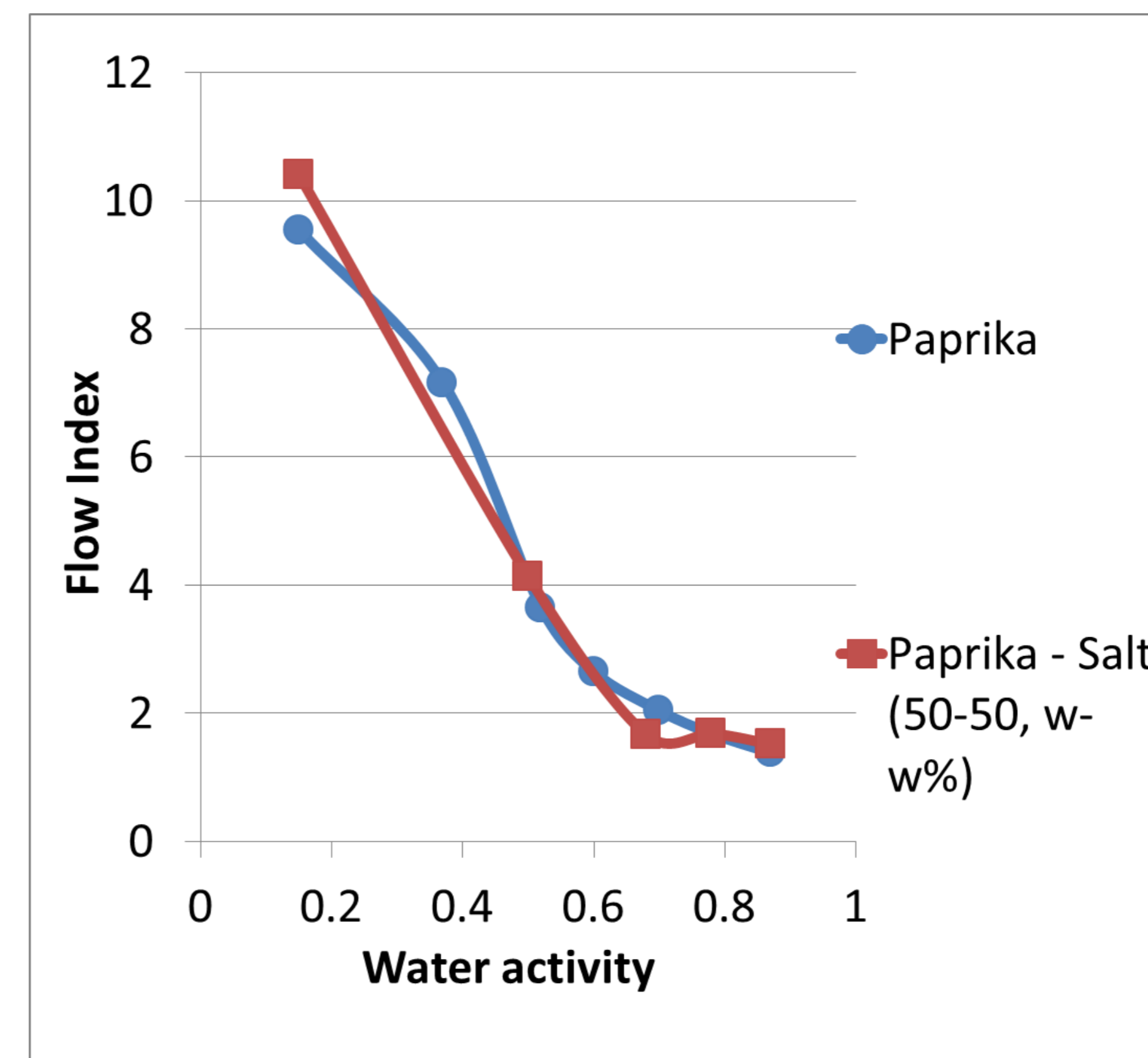
Flow function plot of paprika for different a_w



Flow function plot of oregano for different a_w



Flow Index of salt, paprika and oregano for different a_w



Flow Index of paprika and paprika - salt (50-50, w/w) mix for different a_w

Conclusions

- ✓ Salt flow properties influenced drastically in $a_w > 0.68$
- ✓ Paprika became more cohesive gradually with the increase of a_w
- ✓ Oregano flow behaviour was unaffected with the change of a_w
- ✓ Flow behaviour of paprika-salt mix (50/50, w/w) coincides with the flow behaviour of pure paprika.

Acknowledgements

This work was supported by the EU seventh framework programme through the "PowTech" Marie Curie Initial Training Network (Project no. EU FP7-PEOPLE-2010-ITN-264722). The authors would like to thank Brookfield Engineering Laboratories Inc. for kindly providing the Brookfield Powder Flow Tester equipment used in this study.

