

Salt has always been a very commonly used product for both food preservation and taste enhancement. Excess sodium intake is a factor contributing to high blood pressure and is associated with cardiovascular disease and stroke (World Health Organization, 2005). In addition to its effects on health, salt has recognized impacts on **doughs rheological properties**.



This work evaluates the effect of salt reduction<sup>1</sup> on dough rheological properties using the Alveolab.

**Q1. IS THE ALVEOGRAPH SUITABLE TO ANALYZE THE IMPACT OF SALT REDUCTION?**

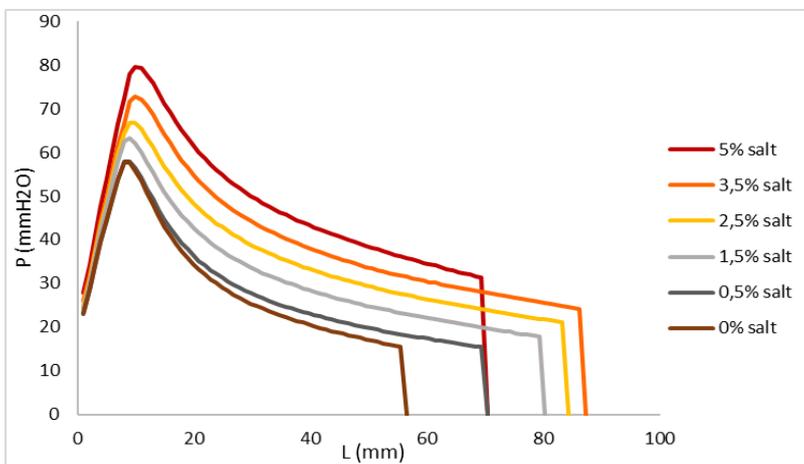
**Yes.** Results showed that the Alveograph is well suited to evaluate ingredients commonly used in the baking industry such as salt (Figure 1).

**Q2. WHAT ARE THE MAJOR CHANGES OBSERVED ON ALVEOGRAPH CURVES WHEN REDUCING THE LEVEL OF SALT?**

The reduction of salt concentration led to a decrease of the dough tenacity (P) associated with a global decrease of the baking strength (W). The elasticity index (Ie) decreases as well. The best extensibility (L) is achieved by an optimal salt concentration between 1.5 and 3.5% (Table 1).

**Q3. IS SALT REDUCTION POSSIBLE TO EVALUATE THANKS TO OTHER DEVICES?**

**Yes.** The Mixolab and the Rheo F4 are also suitable devices to analyze salt reduction impacts. Results of this topic are reported in application FAQ documents N°2016-028-1 and 2016-028-3.



**Figure 1:** Alveograph curves obtained with various levels of salt (from 5% to 0%)

Salt level (%)	5.0%	3.5%	2.5%	1.5%	0.5%	0.0%
P (mm H2O)	88	80	74	70	64	63
L (mm)	69	85	82	79	69	55
W (J*10-4)	220	226	196	167	132	109
P/L	1.28	0.94	0.9	0.89	0.93	1.15
Ie (%)	54.5	52.4	49.9	45	39.8	35.7

**Table 1:** Alveograph data when salt concentration decreases

<sup>1</sup> - Roussel & Chiron, Les Pains Français, 2002 pages 143,144  
 - Thu H. McCann & Li Day, Journal of Cereal Science · May 2013  
 - F. Dal Bello, E. Sheehan, E. K. Arendt & al, Food Research International · August 2009