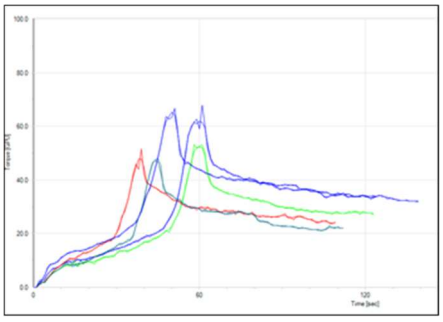
Practice abstract #4.1

The importance of rheological measurements in determining the quality of flour



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CHALLENGE

Dough rheology represents valuable tool in cereal flour quality assessment and is mainly based on the empirical rheological tests according to ISO, AACC, ICC and other national standards. However, the main drawback of these methods is that they are mostly applicable to wheat and for rye in some cases and not for other cereals and other gluten-free crops. Moreover, these methods usually require large quantity of sample which can be quite challenging in some situations.

SOLUTION

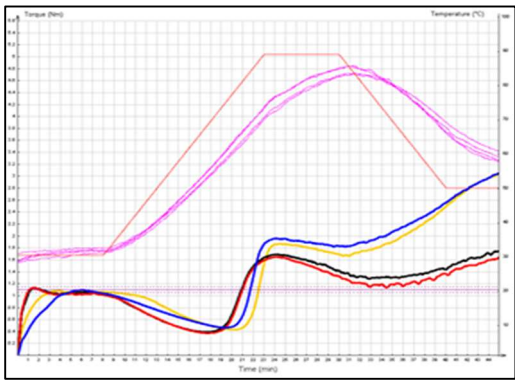
The implementation of recently developed empirical rheological instruments such as Brabender GlutoPeak and Chopin Mixolab can be efficient solution. Brabender GlutoPeak can be useful tool for rapid determination of gluten quality which requires small sample quantities, while Chopin Mixolab can be used for non-gluten containing samples. Moreover, fundamental rheological tests such as dynamic oscillatory test are also employed for dough quality control.

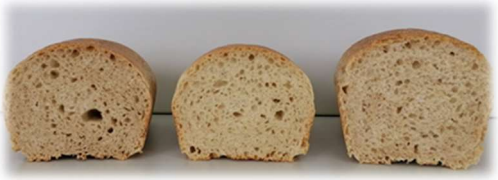
OUTCOME

The obtained rheological parameters gave insight in gluten quality parameters which are related to dough structure, its machinability, gas retention properties, final product quality as well as the behavior of gluten–free samples and samples enriched with gluten-free flours (faba bean, lupine, buckwheat) during the mixing and heating step providing us information regarding dough handling (mixing, molding, etc.) and baking procedure.

PRACTICAL RECOMMENDATIONS

These rheological tests could be successfully exploited for both gluten quality rapid pre-determination of gluten containing samples and for rheological characterization of different flour mixtures which is strongly related to technological processing and final product quality.





About CROPDIVA

CROPDIVA wants to put 6 underused arable crops back in the fields:
oats, hull-less barley for human consumption, triticale, buckwheat, faba beans and lupins.
27 European partners are joining forces to enhance agrobiodiversity in Europe.
They will achieve this by focusing on crop diversity and creating local value chains.

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Značaj reoloških merenja u određivanju kvaliteta brašna

IZAZOV

Procena kvaliteta brašna podrazumeva određivanje reoloških svojstava testa pomoću empirijskih reoloških testova u skladu sa nacionalnim i međunardnim standardima. Međutim, glavni nedostatak ovih metoda je što su uglavnom primenljive na pšenicu i raž u nekim slučajevima, a ne i na druge žitarice i sirovine bez glutena. Štaviše, ove metode obično zahtevaju veliku količinu uzorka što može da predstavlja značajnu prepreku u određenim situacijama kada je količina dostupnog uzorka ograničena.

REŠENJE

Empirijski reološki instrumenti novije generacije kao što su Brabender GlutoPeak i Chopin Miksolab mogu biti odgovor pomenutom problemu. Brabender GlutoPeak može biti koristan za brzo određivanje kvaliteta glutena koji zahteva male količine uzoraka, dok se Chopin Miksolab može koristiti i za uzorke koji ne sadrže gluten. Pored navedenog, fundamentalni reološki testovi kao što su dinamički oscilatorni testovi se takođe koriste za kontrolu kvaliteta brašna i testa.

ISHOD

Dobijeni podaci daju nam uvid u parametre kvaliteta glutena koji se odnose na samu strukturu testa, njegovu obradivost, svojstva zadržavanja gasova, kvalitet finalnog proizvoda. Takođe, primenom ovih testova se utvrđuje i ponašanje uzoraka brašna bez glutena i uzoraka brašna obogaćenih različitim bezglutenskim sirovinama (faba pasulj, lupina, heljda) u toku procesa mešanja i zagrevanja dajući nam informacije o obradivosti testa i ponašanje tokom pečenja.

PRAKTIČNA PRIMENA

Pomenuti reološki testovi se mogu uspešno koristiti kako za brzo određivanje kvaliteta uzoraka koji sadrže gluten, tako i za karakterizaciju različitih smeša brašna što je u velikoj meri povezano sa tehnološkom preradom i kvalitetom finalnog proizvoda.

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