

INTRODUCTION

- With increasing consumer demands for safe, high quality, and sustainably processed food, intense pulsed light (IPL) has been gaining popularity.
- IPL treatment offers more efficient and faster decontamination than a conventional ultraviolet (UV) treatment.

OBJECTIVE

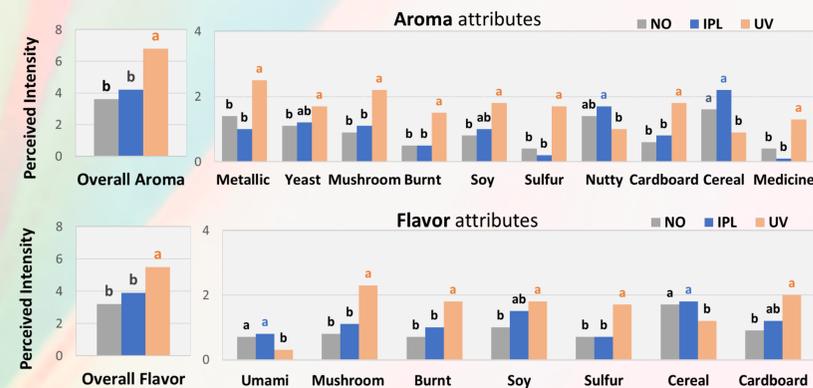
- Compare the effects of IPL pasteurization on the sensory properties of wheat flour with those of UV pasteurization

RESULTS

Descriptive analysis

- There were no significant differences in any of the examined sensory attributes between IPL treated and unprocessed flour.
- UV treatment changed nineteen out of thirty attributes; e.g. UV treatment increased metallic aroma, sulfur aroma, and burnt flavor compared to unprocessed wheat flour.

Figure 1. Mean (n = 8) attribute ratings of flour that differed significantly among the treatments



*abc Mean ratings within an attribute having letter superscripts in common do not differ significantly (SNK test, $p > 0.05$).

Appearance test

- Nether IPL pasteurization or UV pasteurization changed the appearance of wheat flour.

ACKNOWLEDGEMENTS

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Intense pulsed light pasteurization maintained sensory properties of wheat flour better than ultraviolet pasteurization



The poster will be posted at the **UMN Sensory Center**

Myungwoo Kang^{2*}, Paul Chen¹, David Baumler², Chi Chen², Dongjie Chen², Joellen Feirtag², Wesley Mosher², Roger Ruan¹, and Zata Vickers²

¹Center for Biorefining and Department of Bioproducts and Biosystem Engineering;

²Department of Food Science and Nutrition, University of Minnesota Twin Cities, Minnesota

✉ kang0237@umn.edu

MATERIALS AND METHODS

PANELISTS

- Eight trained panelists completed the descriptive analysis.
- Nine or ten panelists participated in the appearance tests.

PRODUCTS[†]

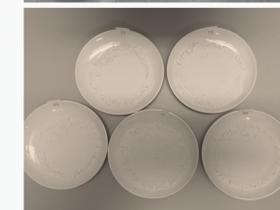
- We used all purpose, enriched and bleached wheat flour.
- Wheat flour samples were treated with one of three processing methods: no additional treatment (NO), IPL, or UV.
- IPL lamp (190 – 1100 nm) emitted 7.12 J/cm²/pulse at 1 Hz in 28 s.
- Continuous-wave UV light produced energy at 254 nm in 120 s.

SAMPLE PREPARATION



Descriptive Analysis

- We served about 12 g of flour in 30 ml cups coded with 3-digit numbers, plus mini spoons and leveling sticks.



Appearance Test

- We spread about 36 g of flour 4 mm thick on a ceramic white plate coded with 3-digit numbers.

EXPERIMENTAL PROCEDURE

Descriptive analysis

- Panelists evaluated the samples for the sensory attributes on the lexicon developed during training using the following standardized protocols:

Aroma evaluation

- Opened cap halfway and smelled the sample with a long sniff
- Closed the cap and rated some aroma attributes
- For additional attributes, participants tapped the sample cup at a 45° angle on both sides, then repeated steps 1 and 2.

Taste, flavor, texture, and aftertaste evaluation

- Used a nose clip (only for taste evaluation)
- Scooped an unpacked amount of flour into the small spoon
- Leveled off using a stick
- Dumped powder on the tongue
- Moved the tongue until the sample had dispersed

- The intensity of each attribute was rated on a 20-point line scale

Appearance test

- Panelists were provided with five samples, informed that two samples were different from the other three, then asked to sort them into two groups according to the similarity in color.

[†] For further information on the IPL system refer to Chen (2020), *decontamination of particulate foods using intense pulsed light and other non-thermal technologies*. Retrieved from the University of Minnesota Digital Conservancy

