Applying nanotechnology to okara for developing soy protein gel-based foods

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Highlights:

1. Nanocellulose technology improves the physicochemical properties of okara.
2. The wet-type grinder (WG)-treated okara improves the gel-forming ability of soy protein isolate (SPI).

The wet-type grinder (WG) is used to produce nanocellulose.

Nanocellulose technology improves the physicochemical properties of okara.

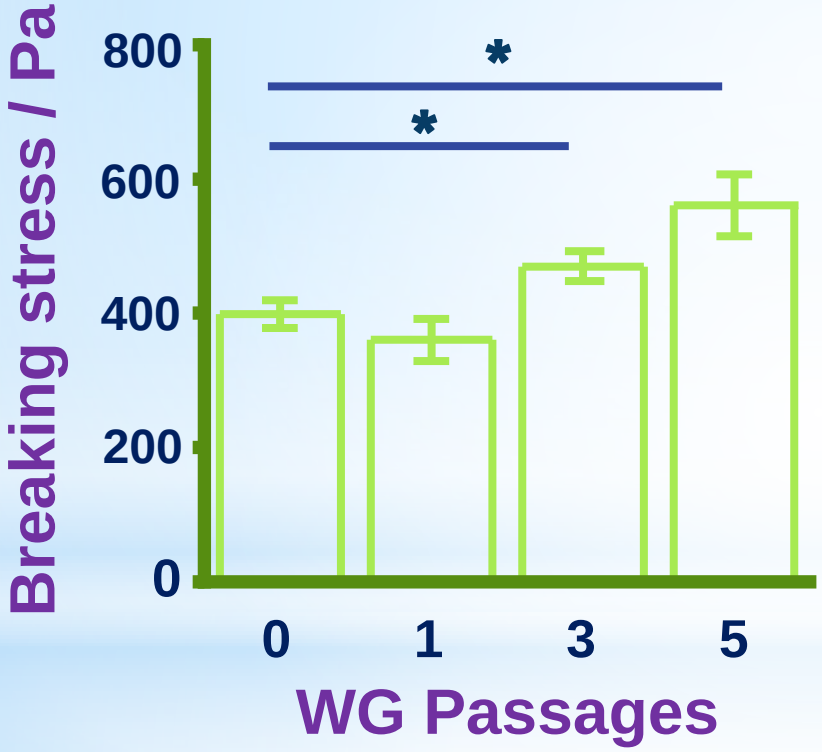
	untreated	one passage	three passages	five passages
Median size (μm)	68.5	13.5	9.9	8.9
Viscosity (mPas)	10	44	73	116

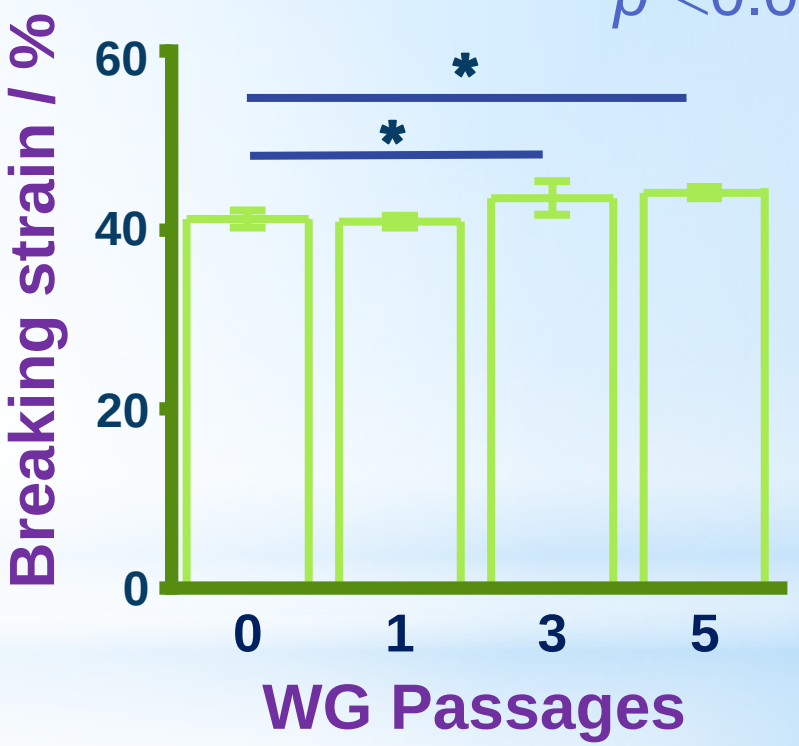
Images after 24 h

1. Okara in water (2 wt%) was treated with a wet-type grinder (WG).
2. The median size in particle size distribution and viscosity of WG-treated okara decreased and increased, respectively, with passages.
3. The WG-treated okara dispersed in water homogeneously with passages after 24 h.

The addition of wet-type grinder (WG)-treated okara increased the breaking stress and strain of soy protein isolate (SPI) gels with increasing in WG passages.

$p^*<0.05$





SPI conc.: 6 wt%; WG-treated okara conc.: 1wt%
Heat-set gels were obtained at 80 °C for 30 min.