

# Physicochemical and sensory properties of high-fiber yogurt by regenerated pomelo albedo fiber

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## RATIONALE

This research aimed to develop high-fiber yogurt using dietary fiber from the regenerated pomelo albedo fiber (RPF).

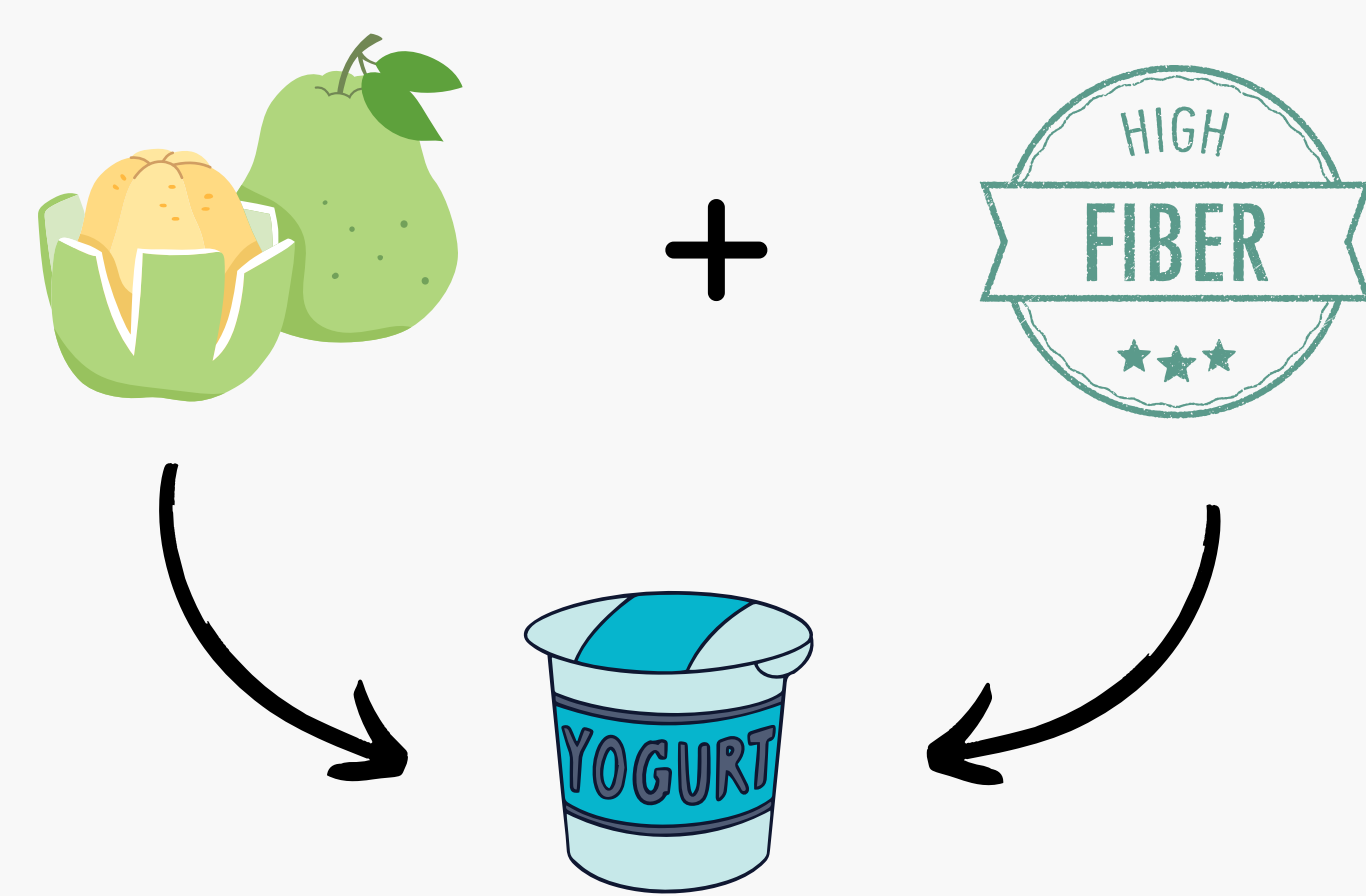


Contains many nutrients, such as natural pigments, minerals, vitamins, polysaccharides, pectin, and fiber.

Mitigate hypertension, hyperlipidemia, hyperglycemia; lower blood lipids level and blood glucose.

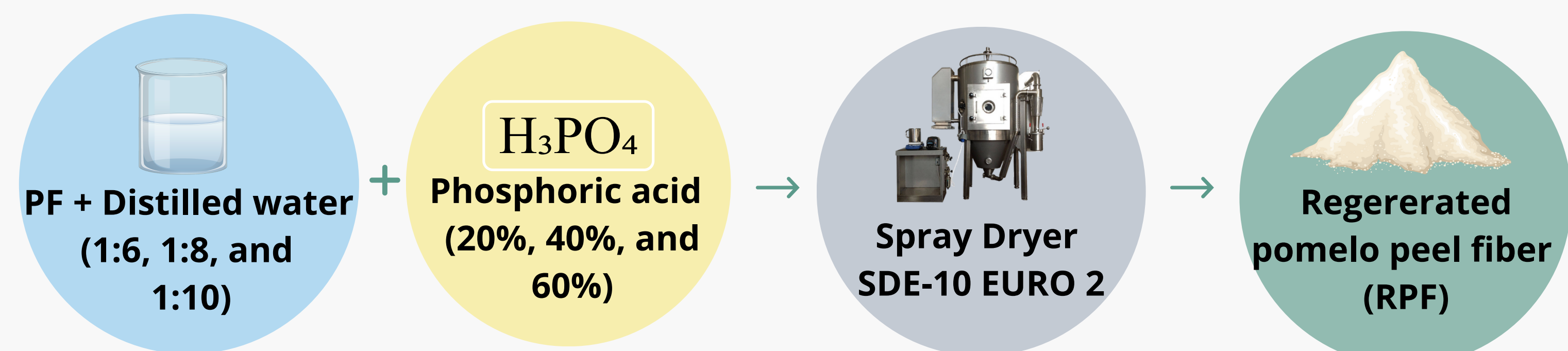
High water holding capacity and could be used beneficially as a texture modifier.

### BENEFITS

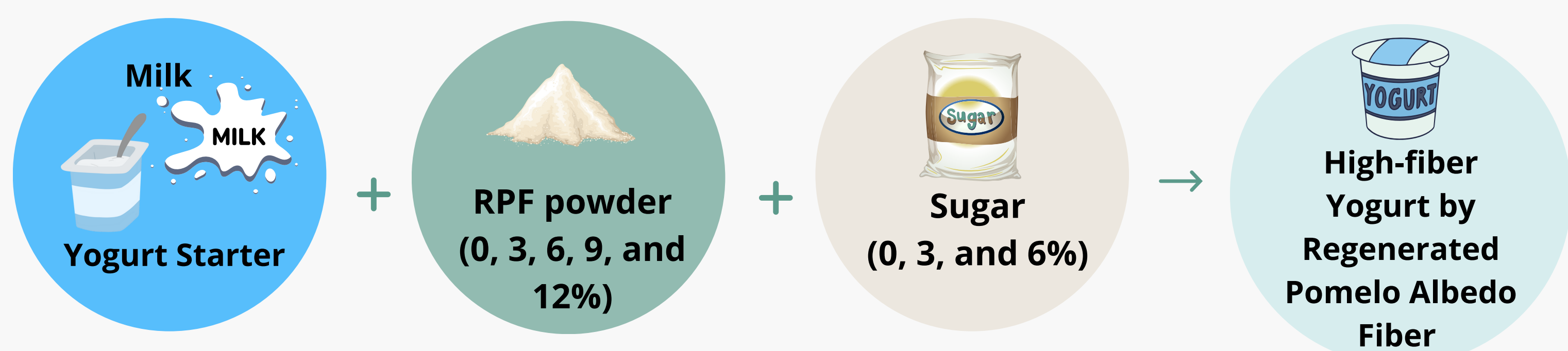


## METHODOLOGY

### Preparation of Regenerated pomelo peel fiber (RPF) powder.



### Yogurt Preparation Process



### Product analysis:

Chemical and physical quality + The effect of RPF on yogurt

## RESULTS

Table 1. Effects of PF per water and phosphoric acid concentration on WAI, WSI, %yield and viscosity.

PF per water (g/mL)	Phosphoric acid	WAI	WSI (%)	yield (%)	Viscosity (cP)
01:06	20	1.96 ± 0.01 <sup>e</sup>	6.50 ± 0.01 <sup>b</sup>	60.31 ± 0.49 <sup>c</sup>	26.75 ± 0.07 <sup>g</sup>
01:06	40	1.69 ± 0.01 <sup>d</sup>	2.94 ± 0.04 <sup>a</sup>	93.42 ± 0.77 <sup>ef</sup>	19.50 ± 0.07 <sup>d</sup>
01:06	60	1.42 ± 0.04 <sup>bc</sup>	9.52 ± 0.02 <sup>e</sup>	89.72 ± 0.01 <sup>d</sup>	18.85 ± 0.07 <sup>c</sup>
01:08	20	1.33 ± 0.04 <sup>bc</sup>	6.80 ± 0.04 <sup>c</sup>	58.79 ± 0.18 <sup>b</sup>	21.60 ± 0.42 <sup>f</sup>
01:08	40	2.31 ± 0.01 <sup>f</sup>	8.47 ± 0.01 <sup>d</sup>	92.22 ± 0.33 <sup>ef</sup>	14.20 ± 0.14 <sup>a</sup>
01:08	60	1.09 ± 0.01 <sup>b</sup>	6.74 ± 0.06 <sup>c</sup>	99.86 ± 0.25 <sup>g</sup>	16.75 ± 0.07 <sup>b</sup>
01:10	20	0.78 ± 0.07 <sup>a</sup>	11.25 ± 0.14 <sup>f</sup>	55.26 ± 1.06 <sup>a</sup>	14.85 ± 0.07 <sup>a</sup>
01:10	40	1.52 ± 0.02 <sup>d</sup>	23.40 ± 0.06 <sup>g</sup>	88.12 ± 0.73 <sup>d</sup>	19.65 ± 0.07 <sup>d</sup>
01:10	60	1.40 ± 0.01 <sup>bc</sup>	5.62 ± 0.06 <sup>b</sup>	98.56 ± 0.28 <sup>g</sup>	19.90 ± 0.14 <sup>de</sup>

Note: Values of mean ± standard deviation, vertically different letters indicate significant differences (p≤0.05)

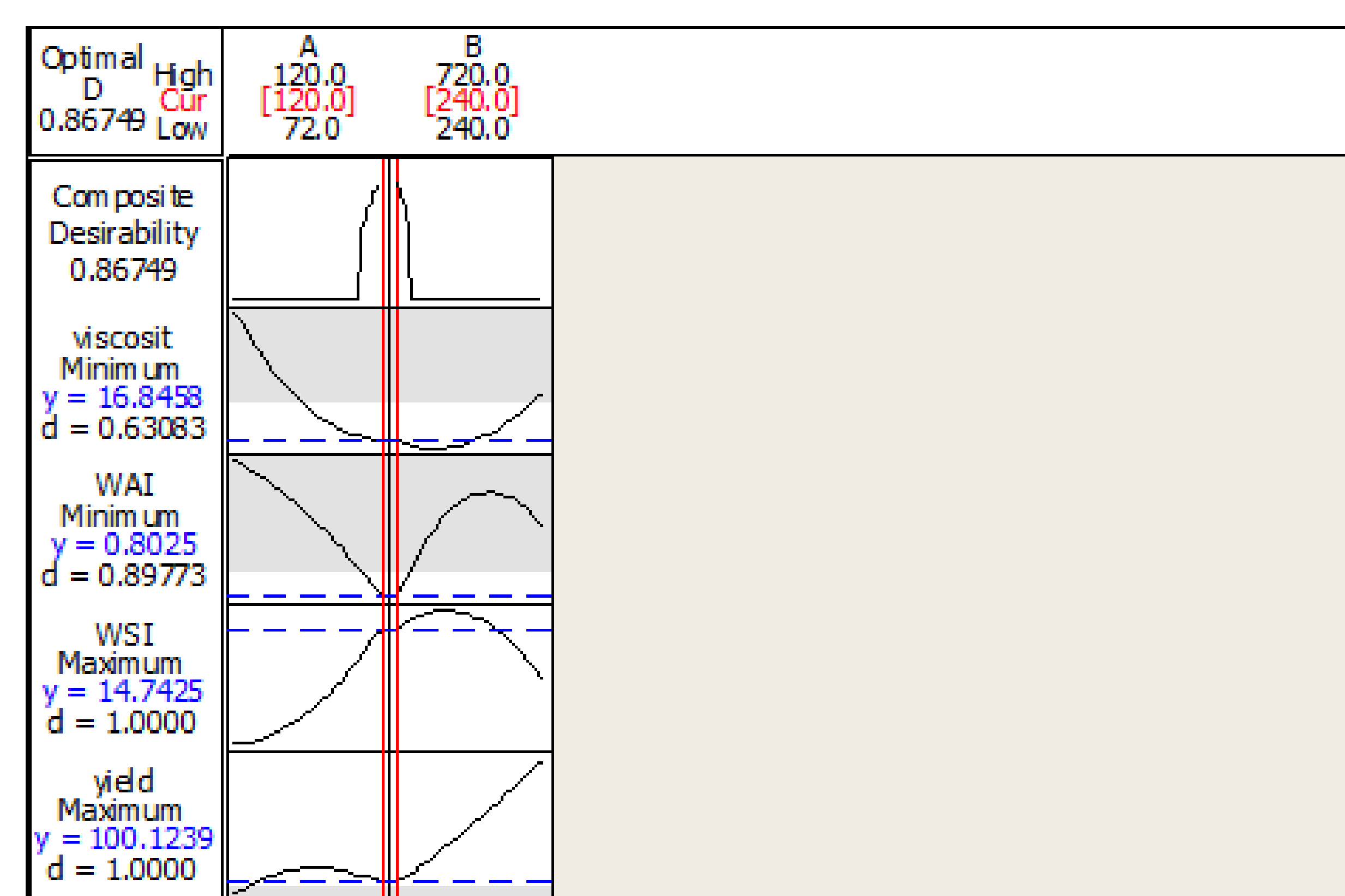


Figure 1. Optimization plot.

Regarding the treatment, 1:10 ratio of PF per water, along with 0,78 WAI, 11.25 WSI, 55.26% yield and 14.85 cP gave the best result.

Table 2. Consumer acceptance score for yogurt containing different RPF content with 3% sugar.

Percentage of RPF	Parameters			
	Colour	Sour	Viscosity	Overall Liking
0%	6.2 ± 1.1 <sup>b</sup>	6.3 ± 0.9 <sup>a</sup>	6.3 ± 1.2 <sup>a</sup>	6.0 ± 1.3 <sup>a</sup>
3%	6.1 ± 1.4 <sup>b</sup>	5.9 ± 1.3 <sup>b</sup>	5.8 ± 1.4 <sup>c</sup>	5.7 ± 1.1 <sup>b</sup>
6%	6.4 ± 0.8 <sup>a</sup>	5.8 ± 0.9 <sup>c</sup>	5.9 ± 1.0 <sup>b</sup>	5.9 ± 0.9 <sup>ab</sup>
9%	6.5 ± 0.9 <sup>a</sup>	5.7 ± 1.0 <sup>cd</sup>	5.9 ± 1.1 <sup>bc</sup>	5.9 ± 1.1 <sup>bc</sup>
12%	6.3 ± 1.0 <sup>ab</sup>	4.7 ± 0.8 <sup>d</sup>	5.4 ± 1.0 <sup>d</sup>	5.4 ± 0.9 <sup>b</sup>

Note: Values of mean ± standard deviation, vertically different letters indicate significant differences (p≤0.05)

Table 3. The consumer acceptance score of developed yogurt.

Parameters	Score
White color of the product	6.9 ± 0.8
Aroma	7.0 ± 0.8
Sour taste	7.0 ± 1.0
Viscosity	6.8 ± 0.8
Overall liking	7.1 ± 0.8

Note: Values of mean ± standard deviation

The consumers tend to give a higher score to the yogurt with 6% RPF and 3% sugar.

## CONCLUSION

- The optimal ratio for making RPF is 1:10 of PF with distilled water along with 20% concentrated of phosphoric acid.
- The suitable quantity of RPF in yogurt products was 6% and a sugar content 3% accepted by the panelist.
- The developed yogurt contained more than 5 g of dietary fiber per 1 serving, which can be claimed as a high-fiber product as recommended by the FDA.

## REFERENCES

Zhao, Y., Hou, Q., Zhuang, X., Wang, Y., Zhou, G., & Zhang, W. (2018). Effect of regenerated cellulose fiber on the physicochemical properties and sensory characteristics of fat-reduced emulsified sausage. *LWT*, 97, 157–163.