

Lampiran 1 Surat Pernyataan Bebas Plagiasi

SURAT PERNYATAAN

Yang bertanda tangan di bawah ini,

Nama : Siti Raeyuni Maulidia Belina

N P M : 201FF04035

adalah mahasiswa Fakultas Farmasi, Universitas Bhakti Kencana, menyatakan dengan sesungguhnya bahwa Naskah Tugas Akhir/Skripsi yang saya tulis dengan judul:

Pemanfaatan Tepung Porang (*Amorphophallus oncophyllus* Prain) dan Tepung Kelapa (*Cocos nucifera* L.) dalam Formulasi Sediaan Pelet Beras Nasi Uduk Instan Menggunakan Metode Ekstrusi-Sferonisasi

adalah benar-benar merupakan hasil karya saya sendiri. Apabila di kemudian hari diketahui bahwa isi Naskah Skripsi ini merupakan hasil plagiasi, maka saya bersedia menerima sanksi berupa pembatalan kelulusan dan atau pencabutan gelar yang saya peroleh.

Demikian surat pernyataan ini saya buat untuk dapat dipergunakan sebagaimana mestinya.

Bandung, 05 Agustus 2022

Yang membuat pernyataan,



(Siti Raeyuni Maulidia Belina)

NPM. 201FF04035

Lampiran 2 Surat Persetujuan untuk dipublikasikan di Media *Online*

SURAT PERNYATAAN

Yang bertanda tangan di bawah ini,

Nama : Siti Raeyuni Maulidia Belina

N P M : 201FF04035

Menyatakan bahwa demi kepentingan perkembangan ilmu pengetahuan, saya menyetujui abstrak Skripsi yang saya tulis dengan judul:

Pemanfaatan Tepung Porang (*Amorphophallus oncophyllus* Prain) dan Tepung Kelapa (*Cocos nucifera* L.) dalam Formulasi Sediaan Pelet Beras Nasi Uduk Instan Menggunakan Metode Ekstrusi-Sferonisasi

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Demikian surat pernyataan ini saya buat untuk dapat dipergunakan sebagaimana mestinya.

Bandung, 05 Agustus 2022

Yang membuat pernyataan,



(Siti Raeyuni Maulidia Belina)

NPM. 201FF04035

Lampiran 3 Certificate of Analysis (CoA) Bahan

A. Tepung Porang



CERTIFICATE OF ANALYSIS

Product : Konjac Powder 85%

Issued Date : 13-Jan-22

No	Item	Analysis Data	Specification
1	Moisture	6.4%	≤ 10 %
2	SO ₂	473,6	≤ 500 ppm
3	Viscositas	37000 mPa S	≥ 20000 mPa S
4	Particle size	40 - 100 mesh	40 - 100 mesh

Note : Viscosity test is using Viscometer Brookfield RV with spindle 4 (speed : 2 rpm) at 4 hour (25°C)
Application Konjac Powder 1.0% Solution

Checked by,

Noris Dian
QC

HEAD OFFICE :
Jalan Dinyo no. 29 Surabaya 60265 Jawa Timur - Indonesia
tel : (+62) 31 - 566 0347 fax : (+62) 31 - 566 0347

www.ambico.co.id

FACTORY :
Desa Carat, Gempol, Pasuruan 67155 Jawa Timur - Indonesia
tel : (+62) 343 - 852 201 fax : (+62) 343 - 853 653

B. Tepung Kelapa



PT. SANINDO PORANG BERKAH

Jl. Diponegoro No. 22, RT. 006 / RW 010, 40021, Desa Ciampeng, Kec. Katapang, Kab. Bandung - Indonesia
Phone : +62811227358 / +6285671327362 Email : sanindo.porang@gmail.com



Certificate Of Analysis

No : 04 / COA / XI / 2021

Date : June 03, 2021 Validity : March 26, 2021 - March 28, 2023
Purchase order : - Best Before Date : March 27, 2023
Container No. : - Commodity : Konjac Powder
Date of manufacture : March 27, 2021

Component	Method	Units	Min	Target	Max
Glucmannan		%	70	75	80
Moisture*	105°C for 4 hrs	%	9	9.87	12
Ash (% WB)			4.88	4.93	4.95
Protein Total, FK = 6.25 (% WB)			0.80	0.82	0.81
Oxalic Calcium (% WB)			0.003	0.003	0.003
Particle Size Distribution*:	British Standard N°410				
-on 500 micron screen		%	0	0	0.5
-on 355 micron screen		%	0	5	13
-on 250 micron screen		%	50	55	60
-on 150 micron screen		%	30	34	38
-on 106 micron screen		%	0	3	6
-pan		%	0	0.6	1.5

Sample No.	Viscosity (cps) 1 Hours	Viscosity (cps) 2 Hours	Viscosity (cps) 3 Hours	Viscosity (cps) 4 Hours	Viscosity (cps) 5 Hours	Average
Konjac Powder (Ex. Oven drying)	17.680	19.987	22.566	23.887	22.720	21.320

Shelf-life : 1-2 years
Storage : Store in well closed sealed bags in dry hygienic conditions.

Indonesia, August 31 2021
PT. SANINDO PORANG BERKAH

AUSSIE DIMAS, S.Ds.
Vice President



Report of Analysis

ORGANIC COCONUT FLOUR

Material Code : NF-CS.05.016



Customer Name : Siti Raeyuni Maulidia Belina
Address : Universitas Bhakti Kencana

Date Analysis : 23.02.2022
Sample Product Code : WE.001592

Purchase Order No. :-
Purchase Order Date :-

SPESIFICATION		TEST RESULT	UNIT
Appearance	< Mesh 20	Pass	-
Odor	Characteristic of Coconut	Pass	-
Taste	Characteristic of Coconut	Pass	-
Moisture Content	Min. 3.0	2.3	%w/w
Protein	Min. 5.0	8.4	%w/w
FFA	Max. 0.14	Negative	%w/w
SO ₂ Content	NLT 90	Negative	Ppm
Fat Content	Min.61	65	%w/w
Total Plate Count	Max. 10	Negative	Colony/ml
Coliform	Max. 50	Negative	MPN/g
E. Coli	Negative	Negative	/25g
Salmonela	Negative	Negative	/25g
Mold and Yeast	<50	Negative	Colony/ml



PRODUCT SPESIFICATION ORGANIC COCONUT FLOUR

No. Dokumen : MM.QC.05.016
Edisi/Revisi : A/0
Tanggal Berlaku : 21 JANUARI 2021
Halaman : 1 dari 6

MM.QC.005



PRODUCT DESCRIPTION

Description : Organic Coconut Flour
Other name : Tepung Kelapa (Indonesian)
Ingredient Statement : 100% Coconut Meat
Botanical name : *Cocos nucifera*
Origin : Central Java, Indonesia

PRODUCT CHARACTERISTIC

CHARACTERISTIC	ANALYSIS	TOLERANCE	UNIT	METHOD/REFERENCE
Physical	Form	Powder	-	NF Standard
	Colour	PaleWhite	-	
	Taste	Characteristic of Coconut	-	
	Odour	Characteristic of Coconut	-	
Chemical	Protein	Min. 5.0	%w/w	SNI 01-3715-2000
	FFA	Max. 0.14	%w/w	
	Moisture Content	Max. 3.0	%w/w	
	Fat Content	Min. 61.0	%w/w	
Heavy Metals	SO ₂ Content	Negative	Ppm	
	Zinc (Zn)	Max. 40.0	Ppm	
	Lead (Pb)	Max. 1.0	Ppm	
	Copper (Cu)	Max. 10.0	Ppm	
	Mercury (Hg)	Max. 0.05	Ppm	
	Arsenic (As)	Max. 0.5	Ppm	
Microbiological	Total Plate Count	Max. 10 ⁵	Colony/g	
	Coliform	Max. 100	MPN/g	
	E. Coli	<3	/25g	
	Salmonella	Negative	/25g	
	Mold and Yeast	<50	Colony/g	

CV. INDOCOCO PASIFIC

Office : Citra Pratama No 1, Banyumas | +62 821 3896 2011
Factory : Jl. M. Yamin No 286A, Banyumas | +62 821 3454 5253
www.indococopasific.com | info@indococopasific.com



C. Gliserol Monostearat (GMS)



IOI Esterchem (M) Sdn Bhd
199201021590 (253094-T)

27/8/21

Certificate of Analysis

Page 1 of 2

Date : 10-Feb-2021 Sample Date : 21-Jan-2021
Certificate No : 890000451517 Approved Date : 21-Jan-2021
Product : PALMSURF GMS 40 SE GLYCERYL MONOSTEARATE 40% SELF-EMULSIFYING Manufacturing Date: 25-Aug-2020
Batch No : GMS4S0018 Expiry Date : 25-Aug-2022
SO No : 105027 :10
Sample Type : BAGS
Sampling Procedure : W1-QC-003/W1-QC-005/W1-QC-022
Quantity : 5.600 MTS

ANALYSIS RESULTS

Test Parameters	Test Result	Specifications	Unit	Test Method
Appearance	Off white powder	Off white powder		Visual Inspection
Colour (5 1/4" Lovibond Cell)_Y	1.6	10.0 Max	Yellow	AOCS Cc 13b-45
Colour (5 1/4" Lovibond Cell)_R	0.4	1.5 Max	Red	AOCS Cc 13b-45
Melting Point	58.0	55.0 - 61.0	°C	AOCS Cc 1-25
Acid Value	1.14	5.00 Max	mg KOH/g	AOCS Cd 3d-63
Saponification Value	164.3	155.0 - 170.0	mg KOH/g	In-house method based on AOCS Cd 3-25
Iodine Value	0.13	2.00 Max	g I2/100g	AOCS Cd 1b-87
Monoester	36.5	35.0 Min	%	AOCS Cd 11-57
Free Glycerol	1.78	6.00 Max	%	AOCS Ca 14-56
Soap	2.42	5.00 Max	%	AOCS Cc 17-95
Moisture	0.55	2.00 Max	%	Karl Fischer

This COA shall not be re-produced except in full, without written approval from Laboratory.



Issued by shipper/ Manufacturer
CERTIFIED BY
IOI Esterchem (M) Sdn Bhd

[Signature]

Chong Choy Yoke
B.APP SC.(I) (ons) LMIC
(L/1499/4781/05)
QC Manager

2011, Lembaga Perusahaan Sains, Prati Industri Control, 15601 Petai, Perak, Malaysia

D. Polyvinyl Pyrrolidone (PVP)



安徽山河药用辅料股份有限公司检验报告单
ANHUI SUNHERE PHARMACEUTICAL EXCIPIENTS CO., LTD.
ADD: Economic and Technological Developing Zone, Huainan, Anhui, China

CERTIFICATE OF ANALYSIS

Product: Povidone K30

Batch No.	211203	REP DATE	DEC.09,2021
Specifications	25kg/drum	MFG DATE	DEC.03,2021
Quantity	3000kg	EXP DATE	DEC.02,2023
Tests	Standard USP43	Examinations	
Identification A-E	Positive	Complies	
Appearance	White or yellowish-white powder	White powder	
Solubility	Freely soluble in water, ethanol 96%, methanol, very slightly soluble in acetone.	Complies	
Appearance of solution	Clear and NMT B ₁ , B ₂ , or B ₃	Complies	
pH (5% in water)	3.0-5.0	3.8	
K-value	27-32	28.3	
Aldehydes	≤500ppm	<500ppm	
Peroxides (H ₂ O ₂)	≤400ppm	<400ppm	
Formic acid	≤0.5%	0.35%	
Hydrazine	≤1ppm	<1ppm	
Vinylpyrrolidinone	≤0.001%	<10ppm	
2-Pyrrolidone	≤3.0%	1.80%	
Heavy metals (CP2010)	≤10ppm	<10ppm	
Lead	≤10ppm	<10ppm	
Water	≤5.0%	3.0%	
Residue on Ignition	≤0.1%	0.08%	
Nitrogen content	11.5-12.8%	12.1%	
Total Aerobic Plate Count	≤100cfu/g	10cfu/g	
Mold and Yeast Count	≤100cfu/g	10cfu/g	
E.coli	Not detected	Complies	
Staphylococcus Aureus	Not detected	Complies	
Pseudomonas aeruginosa	Not detected	Complies	
Salmonella Spp	Not detected	Complies	

Lampiran 4 Alat dan Bahan

A. Alat



Kukusan Elektrik



Neraca Analitik



Ekstruder



Disc Ekstruder 3 mm



Overhead Stirrer



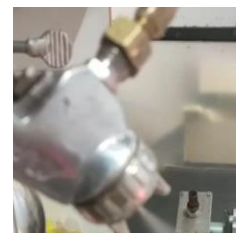
Plat Friksi Sferoniser



Wadah Sferoniser



Pan Coater dan Mixer



Atomizer



Dryer



Oven



Flow Tester



Angle of
Repose Tester



Kukusan Elektrik



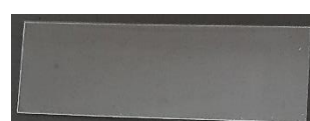
Moisture Balance



Sieve Shaker

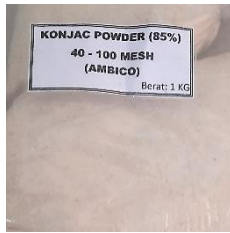


Jangka Sorong



Object Glass

B. Bahan



Tepung Porang



Tepung Kelapa



Gliserol Monostearat



Polyvinyl
pyrrolidone K30



Opadry®



Aquadest



Bamboe® Bumbu
Nasi Uduk Instan

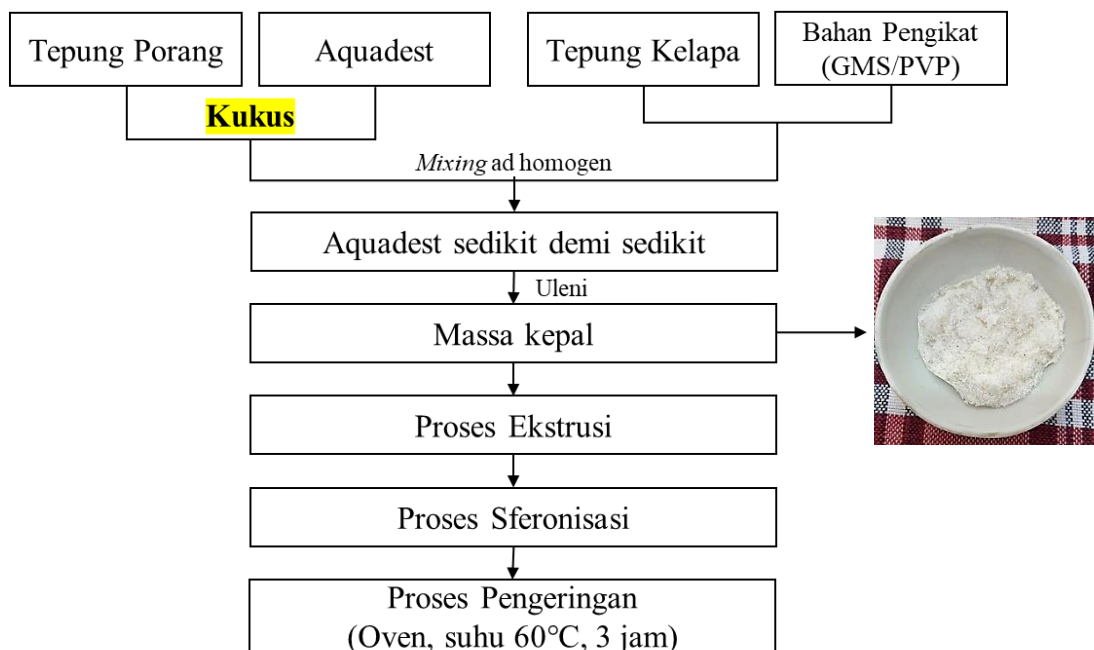


Tropicana Slim®
Beras Shirataki

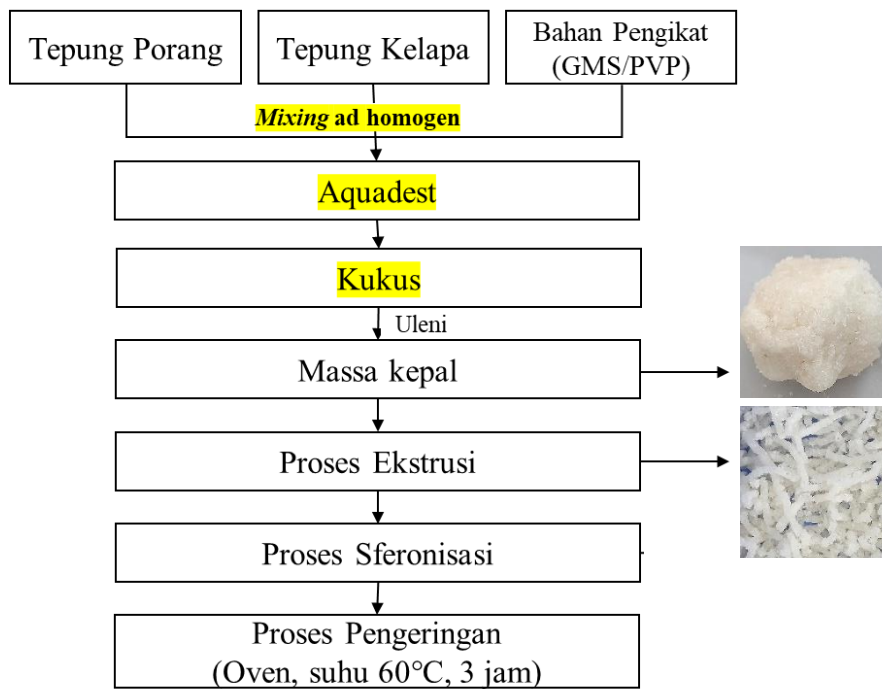


Fukumi®
Beras Shirataki

Lampiran 5 Optimasi Prosedur Pembuatan Sediaan Pelet Beras Nasi Uduk Instan

A. Prosedur 1**B. Prosedur 2**

C. Prosedur 3



Skema Alat Kukus:



Lampiran 6 Prosedur Ekstrusi, Sferonisasi, dan *Coating*

Lampiran 7 Hasil Evaluasi Sediaan Optimasi Bahan Pengikat

A. Uji Organoleptik

Formula	Ekstrudat	Sferoid	
		Basah	Kering
F ₁			
F ₂			
F ₃			
F ₄			
F ₅			
F ₆			

B. Uji Kadar Air (Susut Pengeringan)

Formula	Kadar Air/Susut Pengeringan (%)			Rata-rata±SD
	Replikasi 1	Replikasi 2	Replikasi 3	
F ₁	4,297	4,140	4,374	4,270±0,119
F ₂	5,443	4,978	5,295	5,239±0,238
F ₃	7,091	6,961	6,717	6,923±0,190
F ₄	6,020	6,041	6,073	6,045±0,027
F ₅	5,400	5,624	5,558	5,527±0,115
F ₆	3,999	4,036	4,074	4,036±0,038

C. Uji Sifat Alir**1) Uji Laju Alir****a. Formula 1**

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	6,62	$\frac{50,00 \text{ g}}{6,62 \text{ detik}} = 7,553$
2	50,00	6,61	$\frac{50,00 \text{ g}}{6,61 \text{ detik}} = 7,564$
3	50,00	6,63	$\frac{50,00 \text{ g}}{6,63 \text{ detik}} = 7,541$
Rata-rata±SD			7,553±0,011

d. Formula 4

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	6,37	$\frac{50,00 \text{ g}}{6,37 \text{ detik}} = 7,849$
2	50,00	6,15	$\frac{50,00 \text{ g}}{6,15 \text{ detik}} = 8,130$
3	50,00	6,36	$\frac{50,00 \text{ g}}{6,36 \text{ detik}} = 7,862$
Rata-rata±SD			7,947±0,159

b. Formula 2

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	6,21	$\frac{50,00 \text{ g}}{6,21 \text{ detik}} = 8,052$
2	50,00	6,22	$\frac{50,00 \text{ g}}{6,22 \text{ detik}} = 8,039$
3	50,00	6,18	$\frac{50,00 \text{ g}}{6,18 \text{ detik}} = 8,091$
Rata-rata±SD			8,060±0,027

e. Formula 5

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	6,11	$\frac{50,00 \text{ g}}{6,11 \text{ detik}} = 8,183$
2	50,00	6,16	$\frac{50,00 \text{ g}}{6,16 \text{ detik}} = 8,117$
3	50,00	6,22	$\frac{50,00 \text{ g}}{6,22 \text{ detik}} = 8,039$
Rata-rata±SD			8,113±0,072

c. Formula 3

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,91	$\frac{50,00 \text{ g}}{5,91 \text{ detik}} = 8,460$
2	50,00	5,90	$\frac{50,00 \text{ g}}{5,90 \text{ detik}} = 8,475$
3	50,00	5,89	$\frac{50,00 \text{ g}}{5,89 \text{ detik}} = 8,489$
Rata-rata±SD			8,475±0,014

f. Formula 6

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,97	$\frac{50,00 \text{ g}}{5,97 \text{ detik}} = 8,375$
2	50,00	5,96	$\frac{50,00 \text{ g}}{5,96 \text{ detik}} = 8,389$
3	50,00	5,90	$\frac{50,00 \text{ g}}{5,90 \text{ detik}} = 8,475$
Rata-rata±SD			8,413±0,054

2) Uji Sudut Istirahat

a. Formula 1

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,430	$\tan^{-1}\left(\frac{1,430 \text{ cm}}{2,625 \text{ cm}}\right) = 28,580$
2	2,625	1,485	$\tan^{-1}\left(\frac{1,485 \text{ cm}}{2,625 \text{ cm}}\right) = 29,497$
3	2,625	1,410	$\tan^{-1}\left(\frac{1,410 \text{ cm}}{2,625 \text{ cm}}\right) = 28,242$
Rata-rata $\pm$ SD			28,773 $\pm$ 0,650

b. Formula 2

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,310	$\tan^{-1}\left(\frac{1,310 \text{ cm}}{2,625 \text{ cm}}\right) = 26,521$
2	2,625	1,305	$\tan^{-1}\left(\frac{1,305 \text{ cm}}{2,625 \text{ cm}}\right) = 26,434$
3	2,625	1,370	$\tan^{-1}\left(\frac{1,370 \text{ cm}}{2,625 \text{ cm}}\right) = 27,560$
Rata-rata $\pm$ SD			26,839 $\pm$ 0,627

c. Formula 3

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,260	$\tan^{-1}\left(\frac{1,260 \text{ cm}}{2,625 \text{ cm}}\right) = 25,641$
2	2,625	1,200	$\tan^{-1}\left(\frac{1,200 \text{ cm}}{2,625 \text{ cm}}\right) = 24,567$
3	2,625	1,270	$\tan^{-1}\left(\frac{1,27 \text{ cm}}{2,625 \text{ cm}}\right) = 25,818$
Rata-rata $\pm$ SD			25,342 $\pm$ 0,677

d. Formula 4

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,505	$\tan^{-1}\left(\frac{1,505 \text{ cm}}{2,625 \text{ cm}}\right) = 29,827$
2	2,625	1,480	$\tan^{-1}\left(\frac{1,480 \text{ cm}}{2,625 \text{ cm}}\right) = 29,415$
3	2,625	1,500	$\tan^{-1}\left(\frac{1,500 \text{ cm}}{2,625 \text{ cm}}\right) = 29,745$
Rata-rata $\pm$ SD			29,662 $\pm$ 0,218

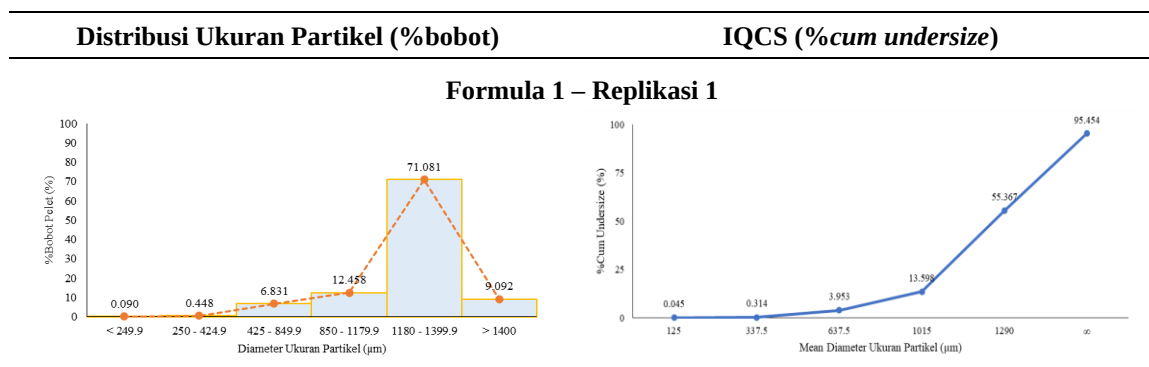
e. Formula 5

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,370	$\tan^{-1}\left(\frac{1,370 \text{ cm}}{2,625 \text{ cm}}\right) = 27,560$
2	2,625	1,320	$\tan^{-1}\left(\frac{1,320 \text{ cm}}{2,625 \text{ cm}}\right) = 26,696$
3	2,625	1,310	$\tan^{-1}\left(\frac{1,310 \text{ cm}}{2,625 \text{ cm}}\right) = 26,521$
Rata-rata $\pm$ SD			26,926 $\pm$ 0,556

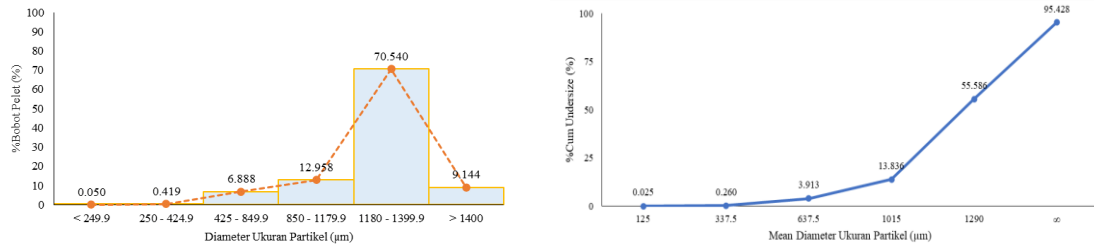
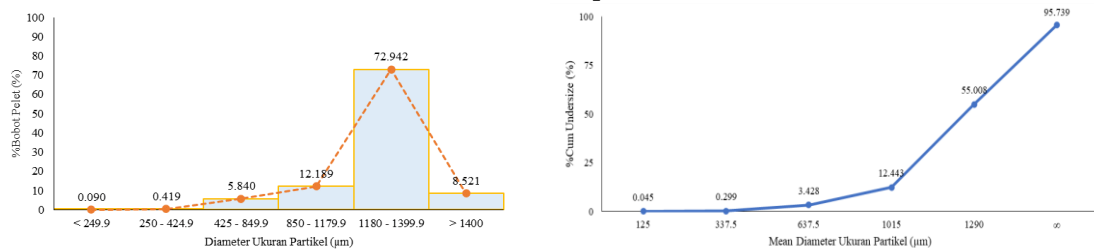
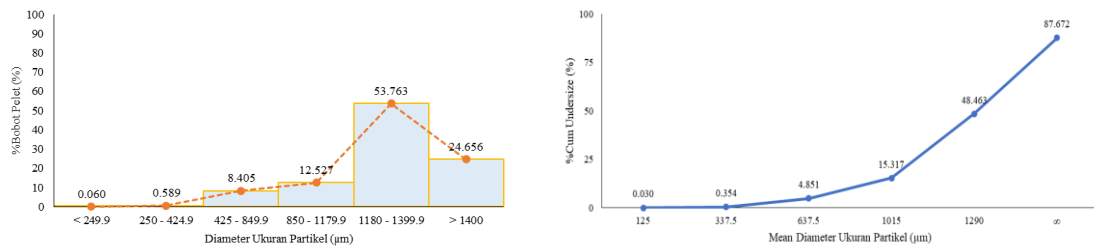
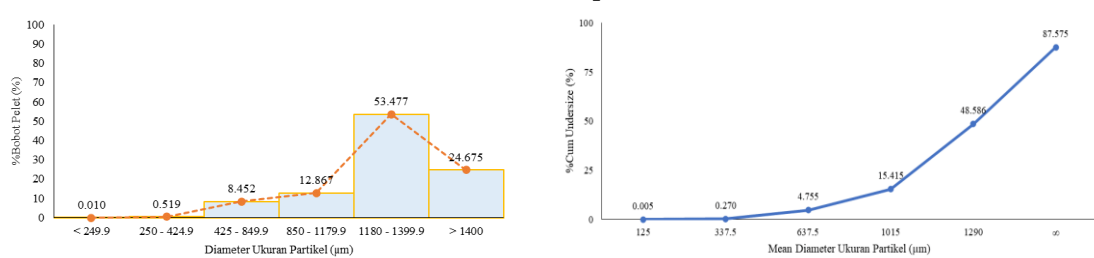
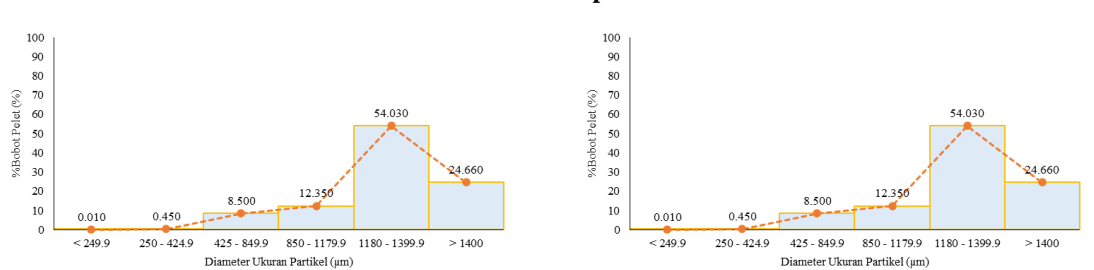
f. Formula 6

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,380	$\tan^{-1}\left(\frac{1,380 \text{ cm}}{2,625 \text{ cm}}\right) = 27,732$
2	2,625	1,330	$\tan^{-1}\left(\frac{1,330 \text{ cm}}{2,625 \text{ cm}}\right) = 26,870$
3	2,625	1,210	$\tan^{-1}\left(\frac{1,210 \text{ cm}}{2,625 \text{ cm}}\right) = 24,747$
Rata-rata $\pm$ SD			26,450 $\pm$ 1,536

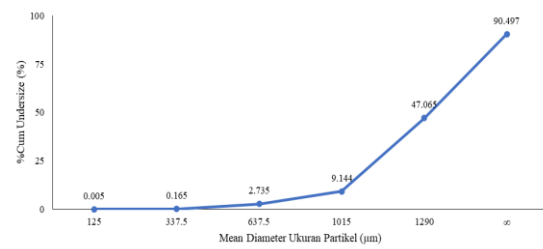
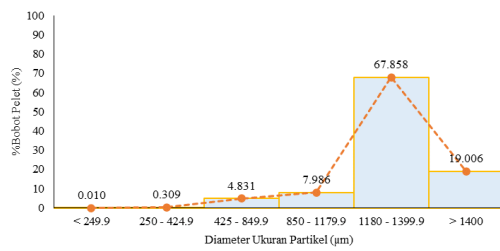
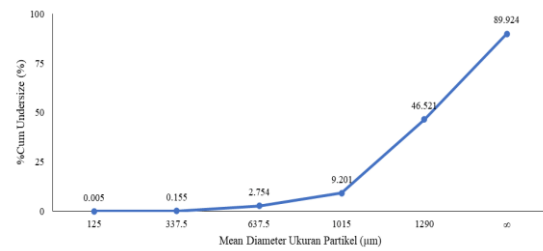
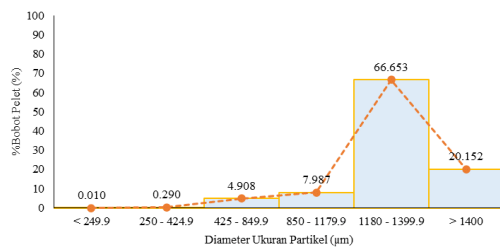
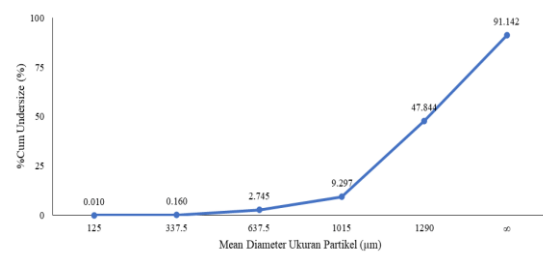
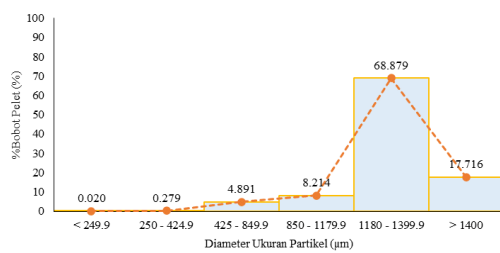
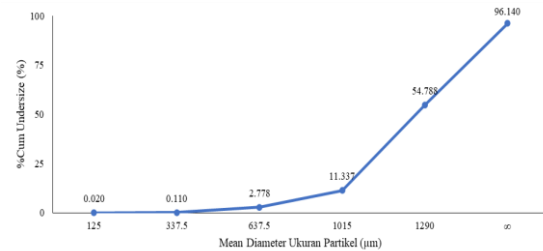
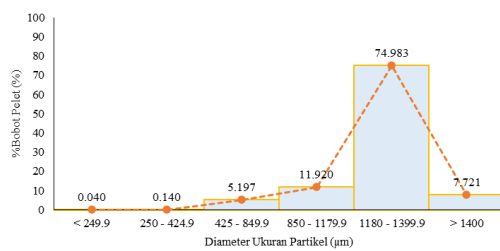
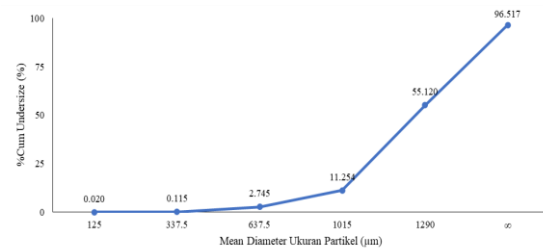
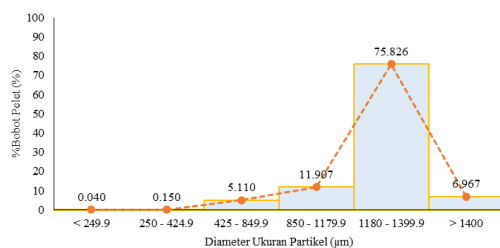
D. Uji Distribusi Ukuran Partikel



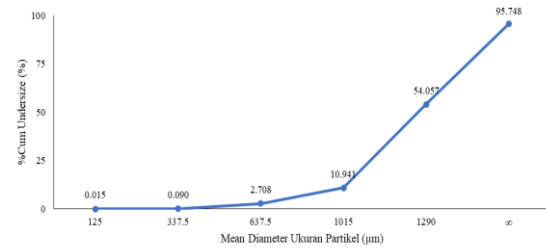
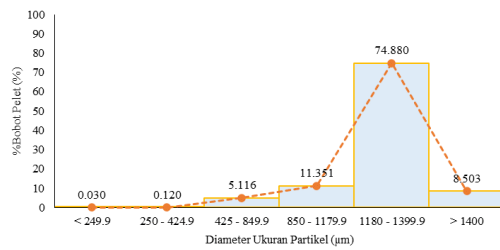
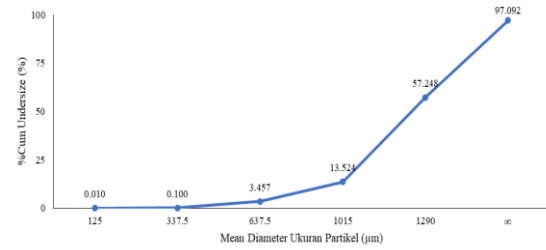
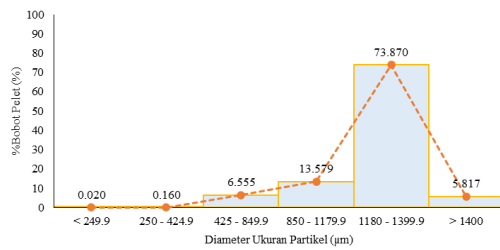
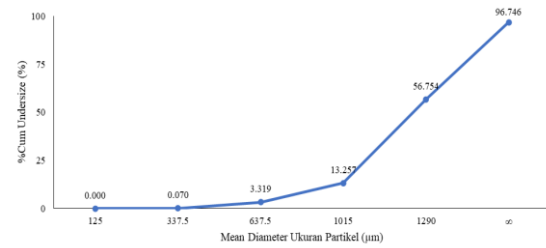
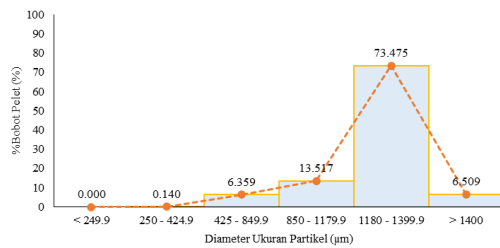
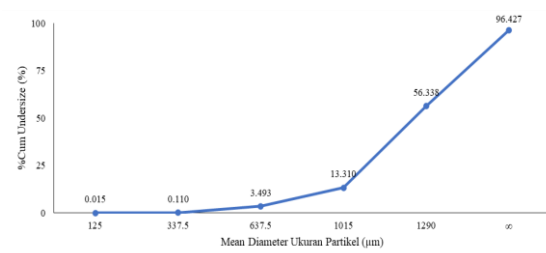
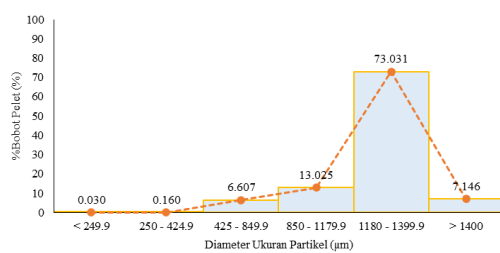
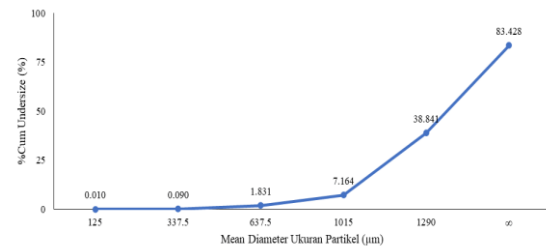
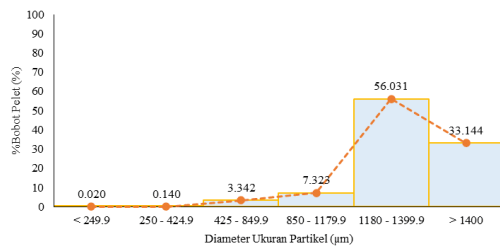
(Lanjutan)

Distribusi Ukuran Partikel (%bobot)**IQCS (%cum undersize)****Formula 1 – Replikasi 2****Formula 1 – Replikasi 3****Formula 2 – Replikasi 1****Formula 2 – Replikasi 2****Formula 2 – Replikasi 3**

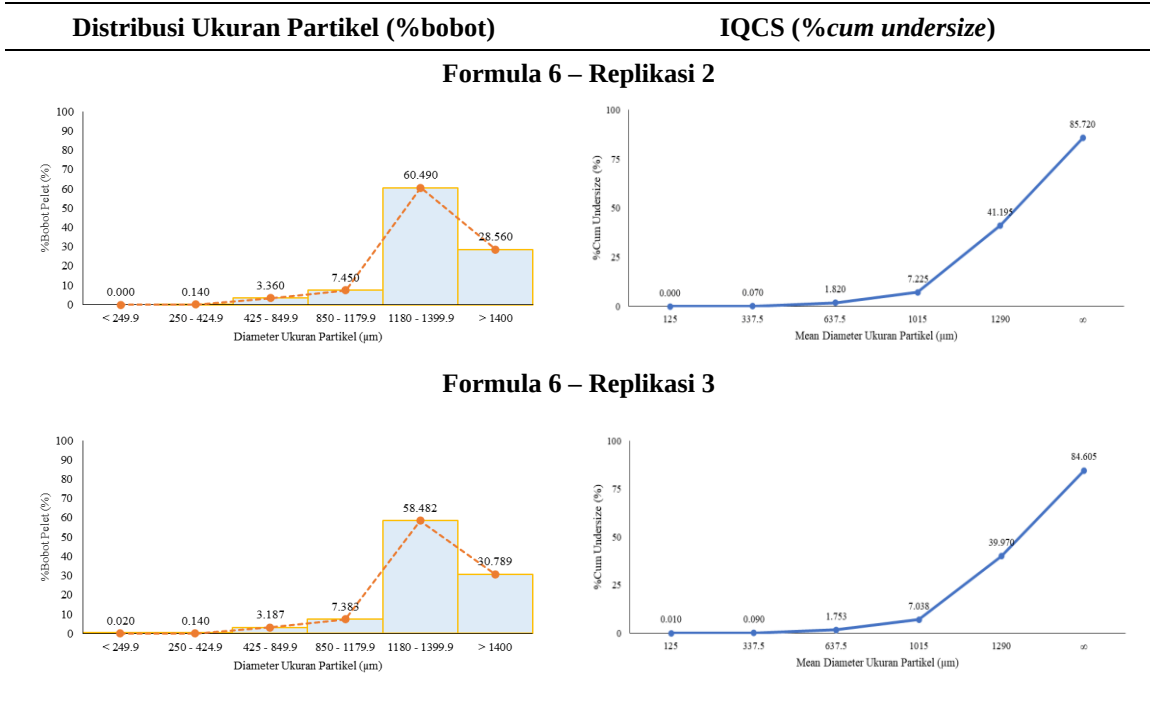
(Lanjutan)

Distribusi Ukuran Partikel (%bobot)**IQCS (%cum undersize)****Formula 3 – Replikasi 1****Formula 3 – Replikasi 2****Formula 3 – Replikasi 3****Formula 4 – Replikasi 1****Formula 4 – Replikasi 2**

(Lanjutan)

Distribusi Ukuran Partikel (%bobot)**IQCS (%cum undersize)****Formula 4 – Replikasi 3****Formula 5 – Replikasi 1****Formula 5 – Replikasi 2****Formula 5 – Replikasi 3****Formula 6 – Replikasi 1**

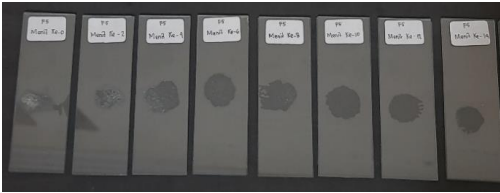
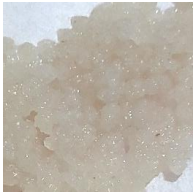
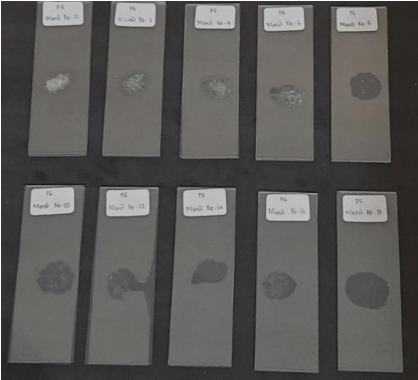
(Lanjutan)



E. Uji Waktu Memasak

Formula	Waktu (Menit)	Hasil
F ₁		
F ₂		
F ₃		
F ₄		

(Lanjutan)

Formula	Waktu (Menit)	Hasil
F ₅		
		

Lampiran 8 Hasil Evaluasi Sediaan Sebelum Penyalutan

A. Uji Organoleptik

Formula	Ekstrudat	Sferoid	
		Basah	Kering
F _{3A}			
F _{3B}			
F _{3C}			

B. Uji Kadar Air (Susut Pengeringan)

Formula	Kadar Air/Susut Pengeringan (%)			Rata-rata
	Replikasi 1	Replikasi 2	Replikasi 3	
F _{3A}				6,528±0,432
F _{3B}				6,486±0,295
F _{3C}				6,806±0,924

C. Uji Sifat Alir**1) Uji Laju Alir****a. Formula 3A**

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,84	$\frac{50,00 \text{ g}}{5,84 \text{ detik}} = 8,562$
2	50,00	5,90	$\frac{50,00 \text{ g}}{5,90 \text{ detik}} = 8,475$
3	50,00	5,91	$\frac{50,00 \text{ g}}{5,91 \text{ detik}} = 8,460$
Rata-rata±SD			8,499±0,055

b. Formula 3B

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,83	$\frac{50,00 \text{ g}}{5,83 \text{ detik}} = 8,576$
2	50,00	5,85	$\frac{50,00 \text{ g}}{5,85 \text{ detik}} = 8,547$
3	50,00	5,84	$\frac{50,00 \text{ g}}{5,84 \text{ detik}} = 8,562$
Rata-rata±SD			8,562±0,015

c. Formula 3C

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,85	$\frac{50,00 \text{ g}}{5,85 \text{ detik}} = 8,547$
2	50,00	5,84	$\frac{50,00 \text{ g}}{5,84 \text{ detik}} = 8,562$
3	50,00	5,83	$\frac{50,00 \text{ g}}{5,83 \text{ detik}} = 8,576$
Rata-rata±SD			8,562±0,015

2) Uji Sudut Istirahat**a. Formula 3A**

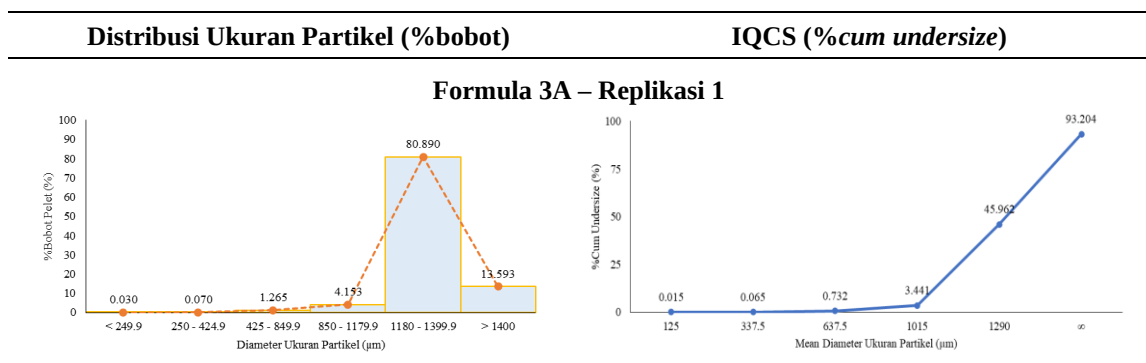
Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,300	$\tan^{-1} \left(\frac{1,300 \text{ cm}}{2,625 \text{ cm}} \right) = 26,346$
2	2,625	1,320	$\tan^{-1} \left(\frac{1,320 \text{ cm}}{2,625 \text{ cm}} \right) = 26,696$
3	2,625	1,310	$\tan^{-1} \left(\frac{1,310 \text{ cm}}{2,625 \text{ cm}} \right) = 26,521$
Rata-rata±SD			26,521±0,175

b. Formula 3B

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,300	$\tan^{-1} \left(\frac{1,300 \text{ cm}}{2,625 \text{ cm}} \right) = 26,346$
2	2,625	1,290	$\tan^{-1} \left(\frac{1,290 \text{ cm}}{2,625 \text{ cm}} \right) = 26,171$
3	2,625	1,310	$\tan^{-1} \left(\frac{1,310 \text{ cm}}{2,625 \text{ cm}} \right) = 26,521$
Rata-rata±SD			26,346±0,175

c. Formula 3C

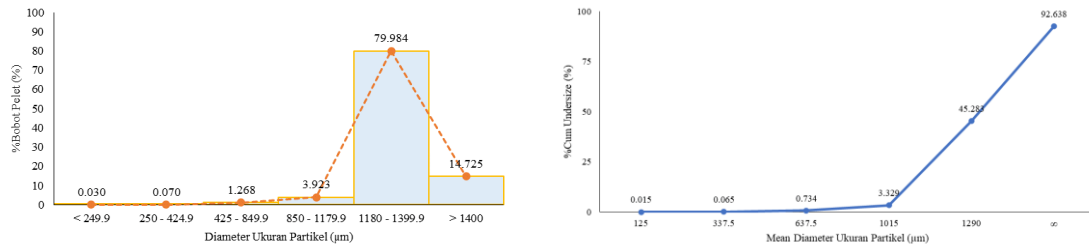
Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,300	$\tan^{-1} \left(\frac{1,300 \text{ cm}}{2,625 \text{ cm}} \right) = 26,346$
2	2,625	1,320	$\tan^{-1} \left(\frac{1,320 \text{ cm}}{2,625 \text{ cm}} \right) = 26,696$
3	2,625	1,290	$\tan^{-1} \left(\frac{1,290 \text{ cm}}{2,625 \text{ cm}} \right) = 26,171$
Rata-rata±SD			26,404±0,267

D. Uji Distribusi Ukuran Partikel

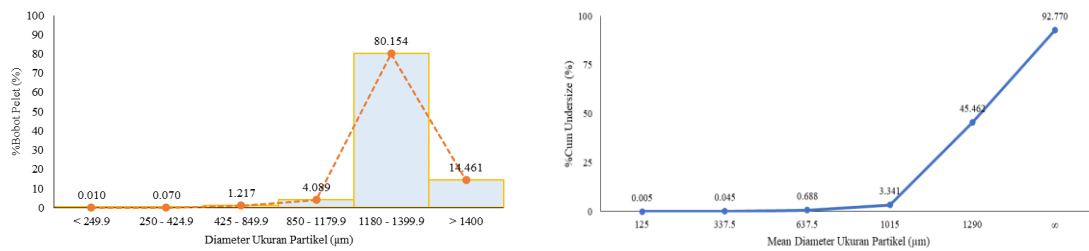
(Lanjutan)

Distribusi Ukuran Partikel (%bobot) **IQCS (%cum undersize)**

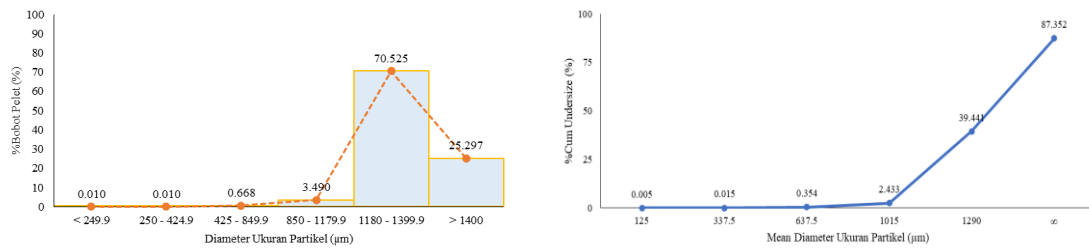
Formula 3A – Replikasi 2



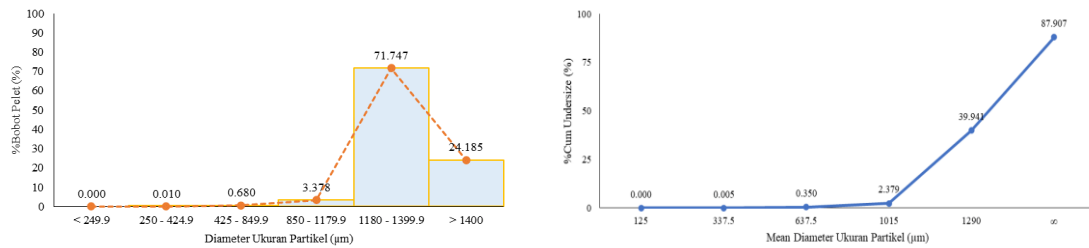
Formula 3A – Replikasi 3



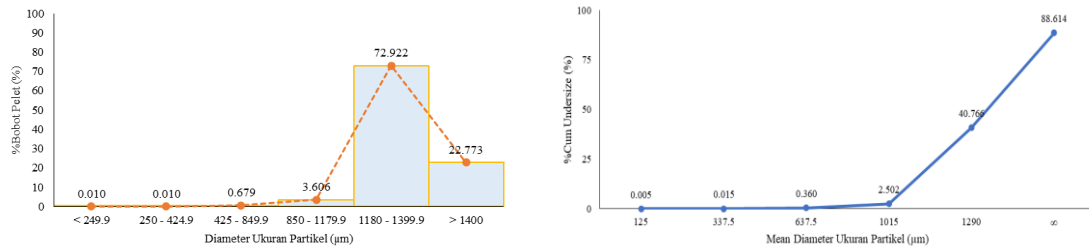
Formula 3B – Replikasi 1



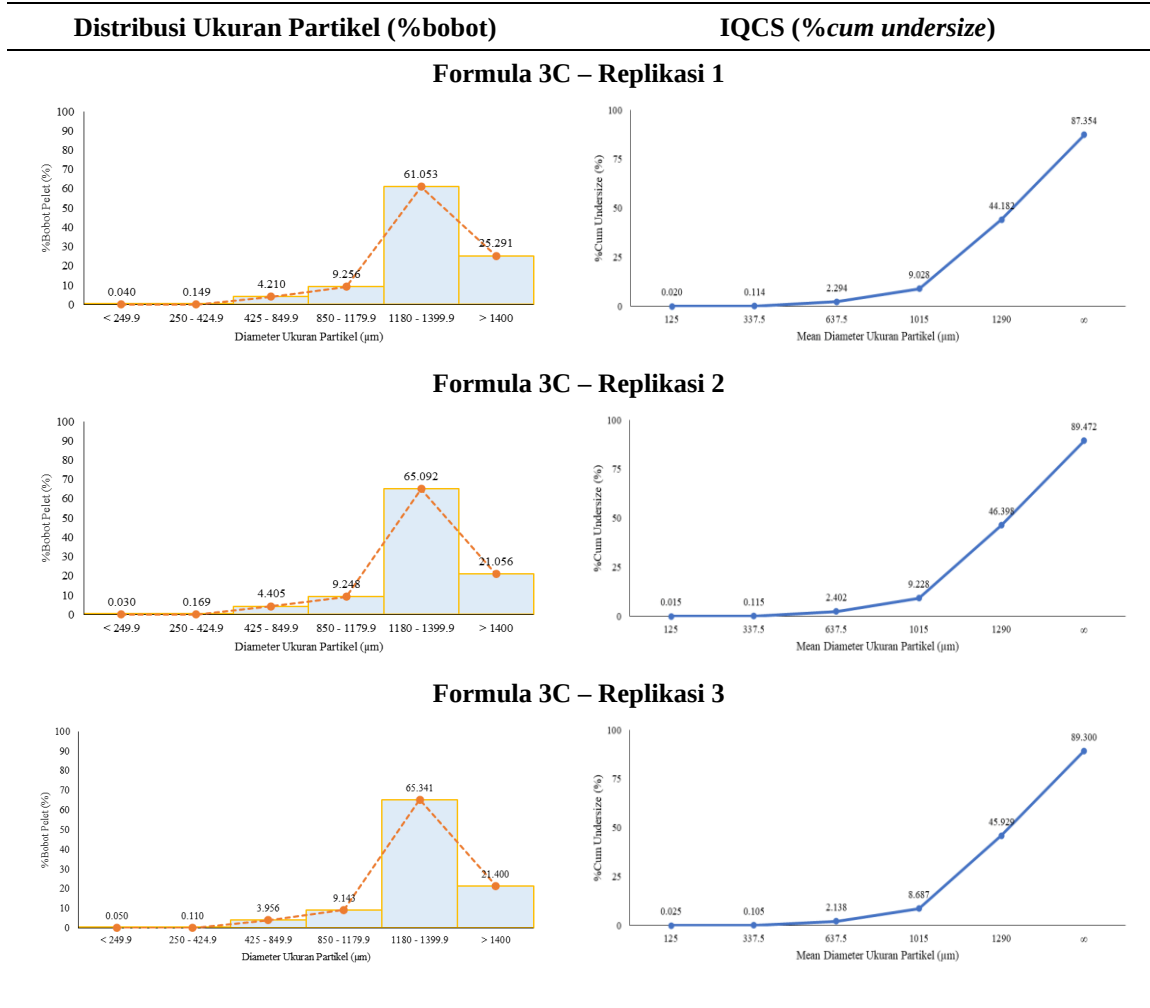
Formula 3B – Replikasi 2



Formula 3B – Replikasi 3



(Lanjutan)



E. Uji Waktu Memasak

Formula	Waktu (Menit)	Hasil
F3A		
F3B		
F3C		

Lampiran 9 Hasil Evaluasi Sediaan Setelah Penyalutan

A. Uji Organoleptik

Formula	Sferoid Setelah Penyalutan		
	Sebelum Dimasak	Setelah Dimasak Tanpa Bumbu	Setelah Dimasak Dengan Bumbu
F_{3A}			
F_{3B}			
F_{3C}			
Pembanding			
Fukumi®			
Tropicana Slim®			

B. Uji Peningkatan Bobot

Formula	Bobot (g)		Peningkatan Bobot (%)
	Sebelum disalut	Setelah disalut	
F _{3A}	375,00	366,10	-2,373
F _{3B}	475,00	463,50	-2,421
F _{3C}	450,00	445,50	-1,000

C. Uji Kadar Air (*Loss on Drying*)

Formula	Kadar Air/ <i>Loss on Drying</i> (%)			Rata-rata
	Replikasi 1	Replikasi 2	Replikasi 3	
F _{3A}				4,631±0,143
F _{3B}				5,200±0,122
F _{3C}				5,361±0,503

D. Uji Sifat Alir**1) Uji Laju Alir****a. Formula 3A**

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,50	$\frac{50,00 \text{ g}}{5,50 \text{ detik}} = 9,091$
2	50,00	5,52	$\frac{50,00 \text{ g}}{5,52 \text{ detik}} = 9,058$
3	50,00	5,44	$\frac{50,00 \text{ g}}{5,44 \text{ detik}} = 9,191$
Rata-rata±SD			9,113±0,069

b. Formula 3B

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,64	$\frac{50,00 \text{ g}}{5,64 \text{ detik}} = 8,865$
2	50,00	5,63	$\frac{50,00 \text{ g}}{5,63 \text{ detik}} = 8,881$
3	50,00	5,57	$\frac{50,00 \text{ g}}{5,57 \text{ detik}} = 8,977$
Rata-rata±SD			8,908±0,060

2) Uji Sudut Istirahat**a. Formula 3A**

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,220	$\tan^{-1} \left(\frac{1,220 \text{ cm}}{2,625 \text{ cm}} \right) = 24,927$
2	2,625	1,260	$\tan^{-1} \left(\frac{1,260 \text{ cm}}{2,625 \text{ cm}} \right) = 25,641$
3	2,625	1,270	$\tan^{-1} \left(\frac{1,270 \text{ cm}}{2,625 \text{ cm}} \right) = 25,818$
Rata-rata±SD			25,462±0,472

b. Formula 3B

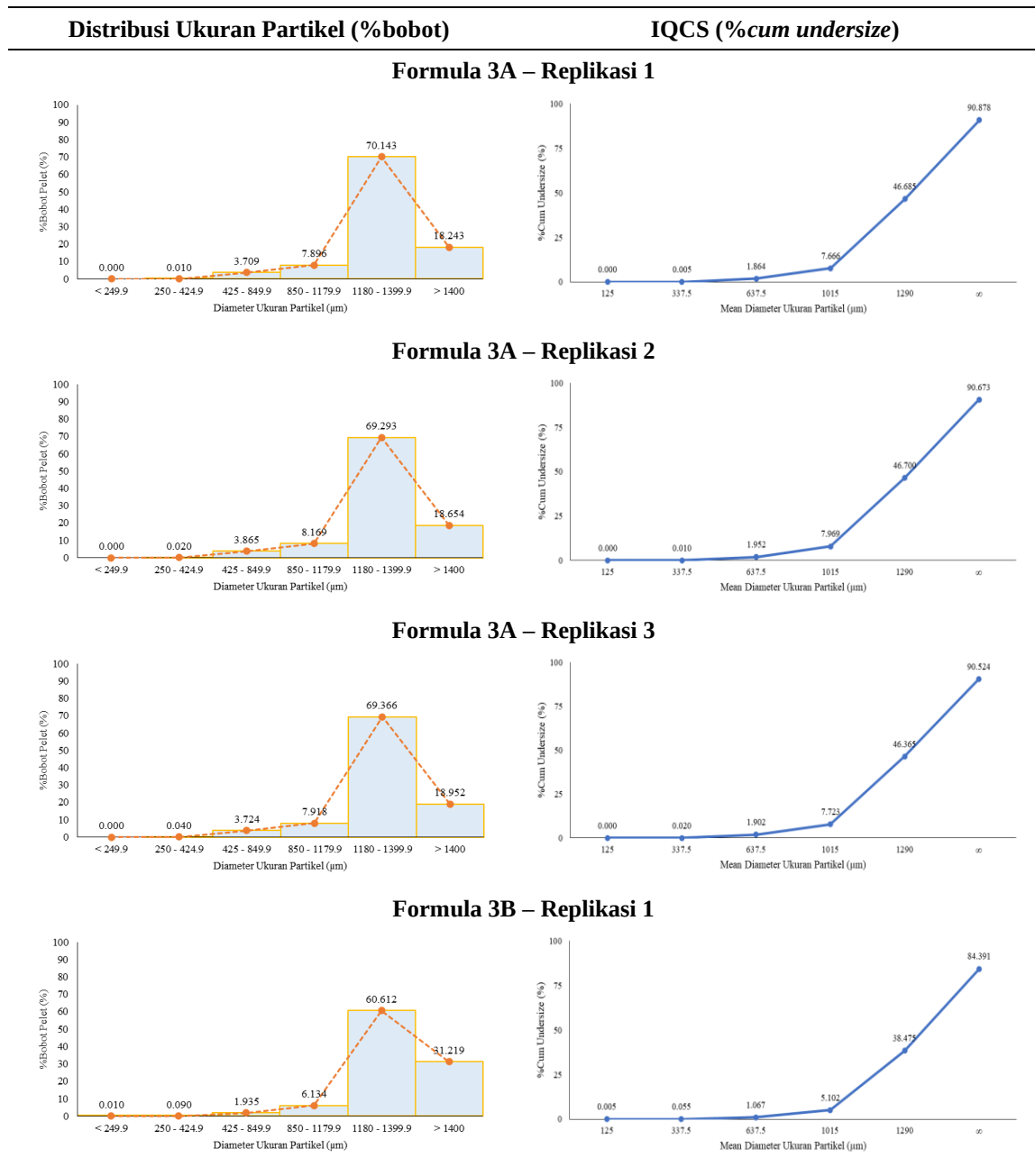
Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,270	$\tan^{-1} \left(\frac{1,270 \text{ cm}}{2,625 \text{ cm}} \right) = 25,818$
2	2,625	1,260	$\tan^{-1} \left(\frac{1,260 \text{ cm}}{2,625 \text{ cm}} \right) = 25,641$
3	2,625	1,280	$\tan^{-1} \left(\frac{1,280 \text{ cm}}{2,625 \text{ cm}} \right) = 25,995$
Rata-rata±SD			25,818±0,177

c. Formula 3C

Replikasi Ke-	Bobot (g)	Waktu (detik)	Hasil
1	50,00	5,70	$\frac{50,00 \text{ g}}{5,70 \text{ detik}} = 8,772$
2	50,00	5,71	$\frac{50,00 \text{ g}}{5,71 \text{ detik}} = 8,757$
3	50,00	5,78	$\frac{50,00 \text{ g}}{5,78 \text{ detik}} = 8,651$
Rata-rata±SD			8,726±0,066

c. Formula 3C

Rep Ke-	Jari-jari (cm)	Tinggi (cm)	Hasil
1	2,625	1,280	$\tan^{-1} \left(\frac{1,280 \text{ cm}}{2,625 \text{ cm}} \right) = 25,995$
2	2,625	1,300	$\tan^{-1} \left(\frac{1,300 \text{ cm}}{2,625 \text{ cm}} \right) = 26,346$
3	2,625	1,260	$\tan^{-1} \left(\frac{1,260 \text{ cm}}{2,625 \text{ cm}} \right) = 25,641$
Rata-rata±SD			25,994±0,353

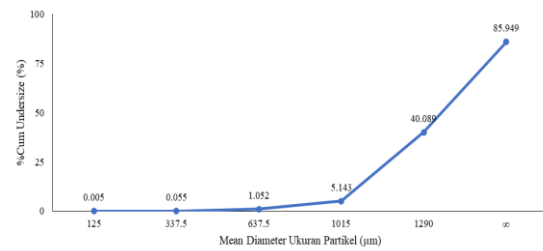
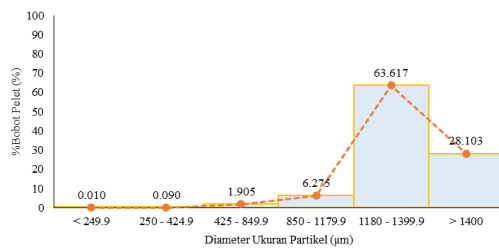
E. Uji Distribusi Ukuran Partikel

(Lanjutan)

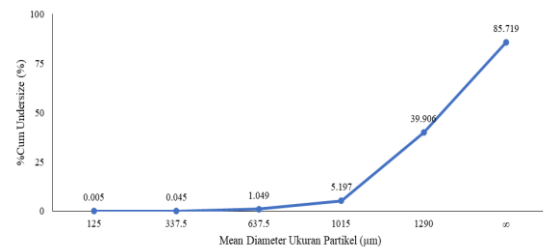
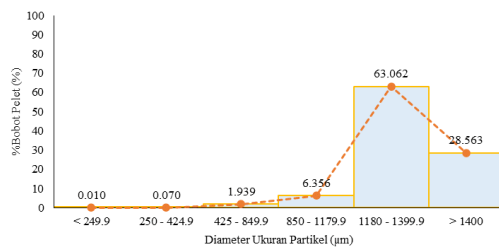
Distribusi Ukuran Partikel (%bobot)

IQCS (%cum undersize)

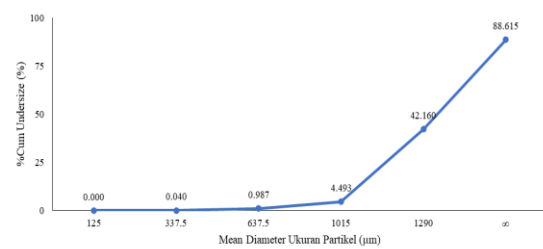
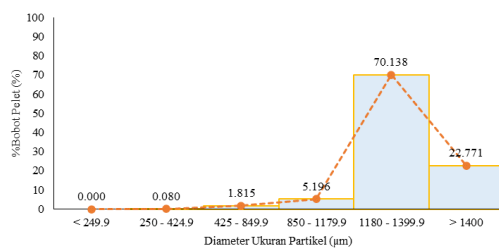
Formula 3B – Replikasi 2



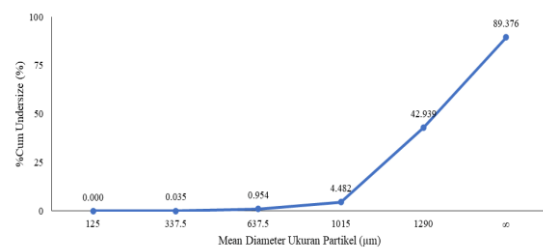
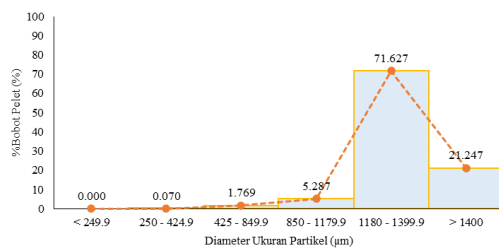
Formula 3B – Replikasi 3



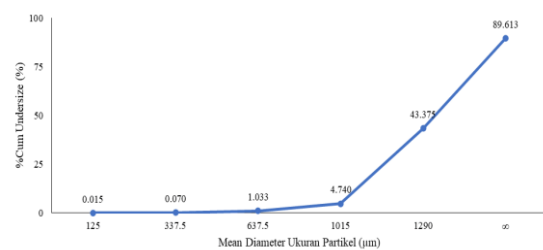
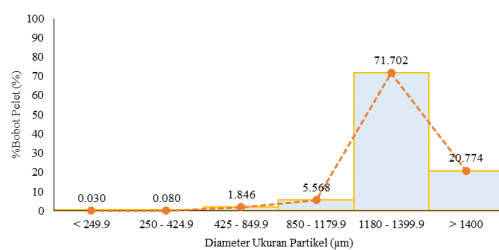
Formula 3C – Replikasi 1



Formula 3C – Replikasi 2



Formula 3C – Replikasi 3



F. Uji Waktu Memasak

Formula	Waktu (Menit)	Hasil
F _{3A}	F _{3A} Masa 30-0	
	F _{3A} Masa 30-5	
	F _{3A} Masa 30-10	
	F _{3A} Masa 30-15	
	F _{3A} Masa 30-20	
	F _{3A} Masa 30-25	
	F _{3A} Masa 30-30	
F _{3B}	F _{3B} Masa 30-0	
	F _{3B} Masa 30-5	
	F _{3B} Masa 30-10	
	F _{3B} Masa 30-15	
	F _{3B} Masa 30-20	
	F _{3B} Masa 30-25	
	F _{3B} Masa 30-30	
F _{3C}	F _{3C} Masa 30-0	
	F _{3C} Masa 30-5	
	F _{3C} Masa 30-10	
	F _{3C} Masa 30-15	
	F _{3C} Masa 30-20	
	F _{3C} Masa 30-25	
	F _{3C} Masa 30-30	

Lampiran 10 Hasil Uji Statistik Evaluasi Sediaan Optimasi Bahan Pengikat GMS

A. Uji Kadar Air (Susut Pengeringan)**Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Kadar_Air Formula 1	.255	3	.	.963	3	.628
Formula 2	.260	3	.	.958	3	.605
Formula 3	.246	3	.	.970	3	.667

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Kadar_Air

Levene Statistic	df1	df2	Sig.
.786	2	6	.498

ANOVA

Kadar_Air

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.811	2	5.406	151.971	.000
Within Groups	.213	6	.036		
Total	11.025	8			

Multiple Comparisons

Dependent Variable: Kadar_Air

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	-.968333 [*]	.153992	.001	-1.34514	-.59153
	Formula 3	-2.652667 [*]	.153992	.000	-3.02947	-2.27586
Formula 2	Formula 1	.968333 [*]	.153992	.001	.59153	1.34514
	Formula 3	-1.684333 [*]	.153992	.000	-2.06114	-1.30753
Formula 3	Formula 1	2.652667 [*]	.153992	.000	2.27586	3.02947
	Formula 2	1.684333 [*]	.153992	.000	1.30753	2.06114

*. The mean difference is significant at the 0.05 level.

B. Uji Sifat Alir**1) Uji Laju Alir****Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Laju_Alir Formula 1	.178	3	.	.999	3	.952
Formula 2	.292	3	.	.923	3	.463
Formula 3	.177	3	.	1.000	3	.962

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Laju_Alir

Levene Statistic	df1	df2	Sig.
1.767	2	6	.249

ANOVA

Laju_Alir

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.280	2	.640	1785.410	.000
Within Groups	.002	6	.000		
Total	1.282	8			

Multiple Comparisons

Dependent Variable: Laju_Alir

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	-.508000 [*]	.015456	.000	-.54582	-.47018
	Formula 3	-.922000 [*]	.015456	.000	-.95982	-.88418
Formula 2	Formula 1	.508000 [*]	.015456	.000	.47018	.54582
	Formula 3	-.414000 [*]	.015456	.000	-.45182	-.37618
Formula 3	Formula 1	.922000 [*]	.015456	.000	.88418	.95982
	Formula 2	.414000 [*]	.015456	.000	.37618	.45182

*. The mean difference is significant at the 0.05 level.

2) Uji Sudut Istirahat**Tests of Normality**

Formula		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Sudut_Istirahat	Formula 1	.284	3	.	.934	3	.503
	Formula 2	.360	3	.	.808	3	.133
	Formula 3	.337	3	.	.854	3	.250

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Sudut_Istirahat

Levene Statistic	df1	df2	Sig.
.021	2	6	.980

ANOVA

Sudut_Istirahat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.754	2	8.877	20.928	.002
Within Groups	2.545	6	.424		
Total	20.299	8			

Multiple Comparisons

Dependent Variable: Sudut_Istirahat
LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	1.934667 ^{**}	.531766	.011	.63348	3.23585
	Formula 3	3.431000 ^{**}	.531766	.001	2.12982	4.73218
Formula 2	Formula 1	-1.934667 ^{**}	.531766	.011	-3.23585	-.63348
	Formula 3	1.496333 ^{**}	.531766	.031	.19515	2.79752
Formula 3	Formula 1	-3.431000 ^{**}	.531766	.001	-4.73218	-2.12982
	Formula 2	-1.496333 ^{**}	.531766	.031	-2.79752	-.19515

*. The mean difference is significant at the 0.05 level.

C. Uji Distribusi Ukuran Partikel (IQCS)**Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Distribusi_Ukuran_Partikel Formula 1	.271	3	.	.947	3	.557
Formula 2	.349	3	.	.832	3	.194
Formula 3	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Distribusi_Ukuran_Partikel

Levene Statistic	df1	df2	Sig.
.844	2	6	.475

ANOVA

Distribusi_Ukuran_Partikel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.063	2	.032	105.861	.000
Within Groups	.002	6	.000		
Total	.065	8			

Multiple Comparisons

Dependent Variable: Distribusi_Ukuran_Partikel
LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	.1860000 ^{**}	.0141343	.000	.151415	.220585
	Formula 3	.1690000 ^{**}	.0141343	.000	.134415	.203585
Formula 2	Formula 1	-.1860000 ^{**}	.0141343	.000	-.220585	-.151415
	Formula 3	-.0170000	.0141343	.274	-.051585	.017585
Formula 3	Formula 1	-.1690000 ^{**}	.0141343	.000	-.203585	-.134415
	Formula 2	.0170000	.0141343	.274	-.017585	.051585

*. The mean difference is significant at the 0.05 level.

Lampiran 11 Hasil Uji Statistik Evaluasi Sediaan Optimasi Bahan Pengikat PVP K30

A. Uji Kadar Air (*Loss on Drying*)

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Kadar_Air Formula 4	.221	3	.	.986	3	.772
Formula 5	.272	3	.	.947	3	.555
Formula 6	.176	3	.	1.000	3	.985

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Kadar_Air

Levene Statistic	df1	df2	Sig.
3.883	2	6	.083

ANOVA

Kadar_Air

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.524	2	3.262	636.789	.000
Within Groups	.031	6	.005		
Total	6.555	8			

Multiple Comparisons

Dependent Variable: Kadar_Air

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 4	Formula 5	.517333 [*]	.058439	.000	.37434	.66033
	Formula 6	2.008333 [*]	.058439	.000	1.86534	2.15133
Formula 5	Formula 4	-.517333 [*]	.058439	.000	-.66033	-.37434
	Formula 6	1.491000 [*]	.058439	.000	1.34801	1.63399
Formula 6	Formula 4	-2.008333 [*]	.058439	.000	-2.15133	-1.86534
	Formula 5	-1.491000 [*]	.058439	.000	-1.63399	-1.34801

*. The mean difference is significant at the 0.05 level.

B. Uji Sifat Alir

1) Uji Laju Alir

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Laju_Alir Formula 4	.371	3	.	.785	3	.078
Formula 5	.188	3	.	.998	3	.910
Formula 6	.337	3	.	.854	3	.250

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Laju_Alir

Levene Statistic	df1	df2	Sig.
3.741	2	6	.088

ANOVA

Laju_Alir

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.335	2	.167	15.080	.005
Within Groups	.067	6	.011		
Total	.401	8			

Multiple Comparisons

Dependent Variable: Laju_Alir

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 4	Formula 5	-.165925	.086021	.102	-.37641	.04456
	Formula 6	-.466016*	.086021	.002	-.67650	-.25553
Formula 5	Formula 4	.165925	.086021	.102	-.04456	.37641
	Formula 6	-.300091*	.086021	.013	-.51058	-.08960
Formula 6	Formula 4	.466016*	.086021	.002	.25553	.67650
	Formula 5	.300091*	.086021	.013	.08960	.51058

*. The mean difference is significant at the 0.05 level.

2) Uji Sudut Istirahat

Tests of Normality

Formula		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Sudut_Istirahat	Formula 4	.314	3	.	.892	3	.362
	Formula 5	.327	3	.	.872	3	.302
	Formula 6	.274	3	.	.944	3	.543

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Sudut_Istirahat

Levene Statistic	df1	df2	Sig.
4.779	2	6	.057

ANOVA

Sudut Istirahat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.036	2	9.018	9.961	.012
Within Groups	5.432	6	.905		
Total	23.468	8			

Multiple Comparisons

Dependent Variable: Sudut_Istirahat

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 4	Formula 5	2.736471 ^a	.776872	.012	.83553	4.63741
	Formula 6	3.212624 ^a	.776872	.006	1.31169	5.11356
Formula 5	Formula 4	-2.736471 ^a	.776872	.012	-4.63741	-.83553
	Formula 6	.476153	.776872	.562	-1.42478	2.37709
Formula 6	Formula 4	-3.212624 ^a	.776872	.006	-5.11356	-1.31169
	Formula 5	-.476153	.776872	.562	-2.37709	1.42478

*. The mean difference is significant at the 0.05 level.

C. Uji Distribusi Ukuran Partikel (IQCS)**Tests of Normality**

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Distribusi_Ukuran_Partikel	Formula 4	.253	3	.	.964	3	.637
	Formula 5	.349	3	.	.832	3	.193
	Formula 6	.320	3	.	.883	3	.335

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Distribusi_Ukuran_Partikel

Levene Statistic	df1	df2	Sig.
8.095	2	6	.020

Test Statistics^{a,b}

	Distribusi_Ukuran_Partikel
Chi-Square	2.400
df	2
Asymp. Sig.	.301

a. Kruskal Wallis Test

b. Grouping Variable: Formula

Lampiran 12 Hasil Uji Statistik Evaluasi Sediaan Setelah Penyalutan

A. Uji Kadar Air (*Loss on Drying*)**Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Kadar_Air Formula 3(A)	.242	3	.	.973	3	.682
Formula 3(B)	.354	3	.	.821	3	.165
Formula 3(C)	.274	3	.	.944	3	.545

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Kadar_Air

Levene Statistic	df1	df2	Sig.
4.294	2	6	.070

ANOVA

Kadar_Air

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.883	2	.442	4.599	.062
Within Groups	.576	6	.096		
Total	1.459	8			

B. Uji Sifat Alir**1) Uji Laju Alir****Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Laju_Alir Formula 3(A)	.293	3	.	.922	3	.459
Formula 3(B)	.337	3	.	.855	3	.253
Formula 3(C)	.344	3	.	.841	3	.218

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Laju_Alir

Levene Statistic	df1	df2	Sig.
.043	2	6	.958

ANOVA

Laju_Alir

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.225	2	.112	26.284	.001
Within Groups	.026	6	.004		
Total	.250	8			

Multiple Comparisons

Dependent Variable: Laju_Alir

LSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 3(A)	Formula 3(B)	.205667 ^{**}	.053367	.008	.07508	.33625
	Formula 3(C)	.386667 [*]	.053367	.000	.25608	.51725
Formula 3(B)	Formula 3(A)	-.205667 ^{**}	.053367	.008	-.33625	-.07508
	Formula 3(C)	.181000 [*]	.053367	.015	.05042	.31158
Formula 3(C)	Formula 3(A)	-.386667 ^{**}	.053367	.000	-.51725	-.25608
	Formula 3(B)	-.181000 [*]	.053367	.015	-.31158	-.05042

*. The mean difference is significant at the 0.05 level.

2) Uji Sudut Istirahat**Tests of Normality**

Formula		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Sudut_Istirahat	Formula 3(A)	.315	3	.	.892	3	.360
	Formula 3(B)	.175	3	.	1.000	3	1.000
	Formula 3(C)	.175	3	.	1.000	3	.995

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Sudut_Istirahat

Levene Statistic	df1	df2	Sig.
1.539	2	6	.289

ANOVA

Sudut_Istirahat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.441	2	.220	1.749	.252
Within Groups	.756	6	.126		
Total	1.197	8			

C. Uji Distribusi Ukuran Partikel (IQCS)**Tests of Normality**

Formula		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Distribusi_Ukuran_Partikel	Formula 3(A)	.333	3	.	.861	3	.270
	Formula 3(B)	.338	3	.	.853	3	.248
	Formula 3(C)	.204	3	.	.993	3	.843

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Distribusi Ukuran Partikel

Levene Statistic	df1	df2	Sig.
.051	2	6	.951

ANOVA

Distribusi Ukuran Partikel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.003	2	.001	2.690	.147
Within Groups	.003	6	.001		
Total	.006	8			

Lampiran 13 Hasil Uji Statistik Perbandingan Sebelum dan Setelah Penyalutan F_{3A}**A. Uji Kadar Air (Susut Pengeringan)****Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Kadar_Air_Sebelum_Penyalutan	.247	3	.	.969	3	.661
Kadar_Air_Setelah_Penyalutan	.242	3	.	.973	3	.682

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Kadar_Air_Sebelum_Penyalutan - Kadar_Air_Setelah_Penyalutan	1.897333	.519413	.299883	.607039	3.187628	6.327	2	.024

B. Uji Sifat Alir**1) Uji Laju Alir****Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Laju_Alir_Sebelum_Penyalutan	.341	3	.	.847	3	.232
Laju_Alir_Setelah_Penyalutan	.293	3	.	.922	3	.459

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Laju_Alir_Sebelum_Peny alutan - Laju_Alir_Setelah_Peny alutan	-.681333	.085161	.049168	-.892884	-.469783	-13.857	2	.005

2) Uji Sudut Istirahat**Tests of Normality**

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sudut_Istirahat_Sebelum_Penyalutan	.175	3	.	1.000	3	1.000
Sudut_Istirahat_Setelah_Penyalutan	.315	3	.	.892	3	.360

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Sudut_Istirahat_Sebelum_Penyalutan - Sudut_Istirahat_Setelah_Penyalutan	1.059000	.358017	.206701	.169637	1.948363	5.123	2	.036

C. Uji Distribusi Ukuran Partikel (IQCS)

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Distribusi_Ukuran_Partike 1 Sebelum_Penyalutan	.341	3	.	.848	3	.234
Distribusi_Ukuran_Partike 1 Setelah_Penyalutan	.333	3	.	.861	3	.270

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Distribusi_Ukuran_Partike 1 Sebelum_Penyalutan - Distribusi_Ukuran_Partike 1 Setelah_Penyalutan	.019800	.016838	.009721	-.022027	.061627	2.037	2	.179

Lampiran 14 Hasil Uji Statistik Perbandingan Sebelum dan Setelah Penyalutan F_{3B}

A. Uji Kadar Air (Susut Pengeringan)

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Kadar_Air_Sebelum_Penyalutan	.190	3	.	.997	3	.903
Kadar_Air_Setelah_Penyalutan	.354	3	.	.821	3	.165

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Kadar_Air_Sebelum_Penyalutan - Kadar_Air_Setelah_Penyalutan	1.286000	.212669	.122784	.757702	1.814298	10.474	2	.009

B. Uji Sifat Alir

1) Uji Laju Alir

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Laju_Alir_Sebelum_Penyalutan	.177	3	.	1.000	3	.962
Laju_Alir_Setelah_Penyalutan	.337	3	.	.855	3	.253

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Laju_Alir_Sebelum_Peny alutan - Laju_Alir_Setelah_Peny alutan	-.346000	.063851	.036865	-.504616	-.187384	-9.386	2	.011

2) Uji Sudut Istirahat

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sudut_Istirahat_Sebelum_Penyalutan	.175	3	.	1.000	3	1.000
Sudut_Istirahat_Setelah_Penyalutan	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Sudut_Istirahat_Sebelum_Penyalutan - Sudut_Istirahat_Setelah_Penyalutan	.528000	.002000	.001155	.523032	.532968	457.261	2	.000

C. Uji Distribusi Ukuran Partikel (IQCS)

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Distribusi_Ukuran_Partikel_1_Sebelum_Penyalutan Formula 3(B)	.385	3	.	.750	3	.000
Distribusi_Ukuran_Partikel_1_Setelah_Penyalutan Formula 3(B)	.338	3	.	.853	3	.248

a. Lilliefors Significance Correction

Ranks

	N	Mean Rank	Sum of Ranks
Distribusi_Ukuran_Partikel_Setelah_Penyalutan - Negative Ranks	1 ^a	3.00	3.00
Distribusi_Ukuran_Partikel_Sebelum_Penyalutan - Positive Ranks	2 ^b	1.50	3.00
Ties	0 ^c		
Total	3		

a. Distribusi_Ukuran_Partikel_Setelah_Penyalutan < Distribusi_Ukuran_Partikel_Sebelum_Penyalutan

b. Distribusi_Ukuran_Partikel_Setelah_Penyalutan > Distribusi_Ukuran_Partikel_Sebelum_Penyalutan

c. Distribusi_Ukuran_Partikel_Setelah_Penyalutan = Distribusi_Ukuran_Partikel_Sebelum_Penyalutan

Test Statistics^a

	Distribusi_Ukuran_Partikel_Setelah_Penyalutan - Distribusi_Ukuran_Partikel_Sebelum_Penyalutan
Z	.000 ^b
Asymp. Sig. (2-tailed)	1.000

a. Wilcoxon Signed Ranks Test

b. The sum of negative ranks equals the sum of positive ranks.

Lampiran 15 Hasil Uji Statistik Perbandingan Sebelum dan Setelah Penyalutan F_{3C} **A. Uji Kadar Air (Susut Pengeringan)****Tests of Normality**

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Kadar_Air_Sebelum_Penyalutan	Formula 3(C)	.327	3	.	.872	3	.300
Kadar_Air_Setelah_Penyalutan	Formula 3(C)	.274	3	.	.944	3	.545

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Kadar_Air_Sebelum_Penyalutan - Kadar_Air_Setelah_Penyalutan	1.445333	.430136	.248339	.376815	2.513851	5.820	2	.028

B. Uji Sifat Alir**1) Uji Laju Alir****Tests of Normality**

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Laju_Alir_Sebelum_Penyalutan	Formula 3(C)	.325	3	.	.875	3	.309
Laju_Alir_Setelah_Penyalutan	Formula 3(C)	.344	3	.	.841	3	.218

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Laju_Alir_Sebelum_Peny alutan - Laju_Alir_Setelah_Peny yalatan	-.198667	.024705	.014263	-.260037	-.137296	-13.928	2	.005

2) Uji Sudut Istirahat**Tests of Normality**

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Sudut_Istirahat_Sebelum_Penyalutan	Formula 3(C)	.253	3	.	.964	3	.637
Sudut_Istirahat_Setelah_Penyalutan	Formula 3(C)	.175	3	.	1.000	3	.995

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Sudut_Istirahat_Sebelum_Penyalutan - Sudut_Istirahat_Setelah_Penyalutan	.410333	.103636	.059834	.152888	.667778	6.858	2	.021

C. Uji Distribusi Ukuran Partikel (IQCS)

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Distribusi_Ukuran_Partike 1_Sebelum_Penyalutan	.328	3	.	.870	3	.294
Distribusi_Ukuran_Partike 1_Setelah_Penyalutan	.204	3	.	.993	3	.843

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Distribusi_Ukuran_Partike 1_Sebelum_Penyalutan - Distribusi_Ukuran_Partike 1_Setelah_Penyalutan	-.020367	.026936	.015551	-.087279	.046546	-1.310	2	.321