

# Horti-BlueC

Upscaling of chitin  
extraction

Loubna FIRDAOUS



# Shrimp shells composition

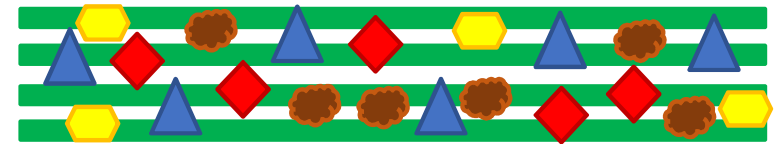


<b>Chitin</b>	<b>30 – 40%</b>
Protein	35%
CaCO <sub>3</sub>	30%
Lipids	5 – 10%

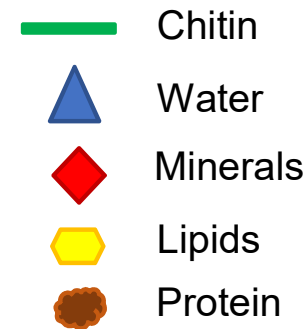
+ Astaxanthin pigment

Composition based upon dry matter

# Shrimp shells composition



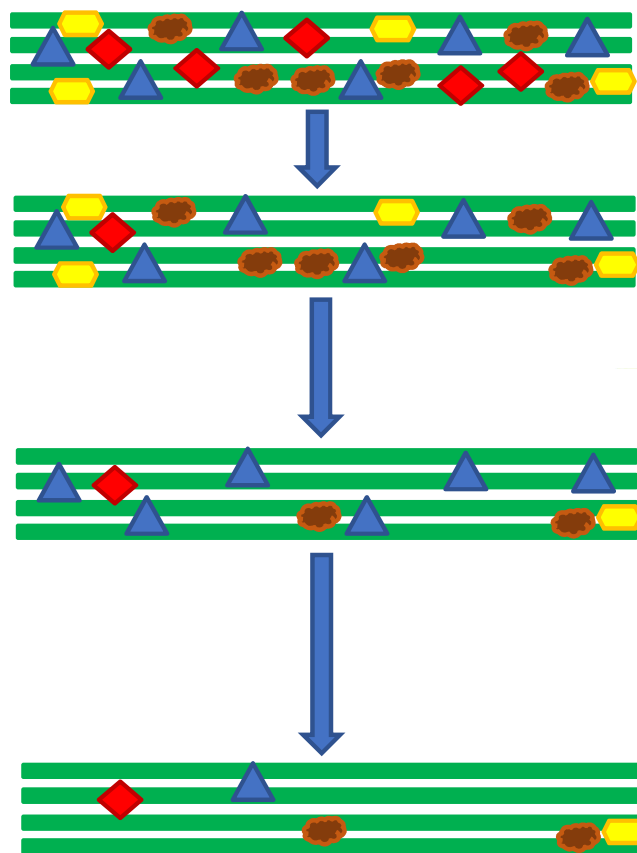
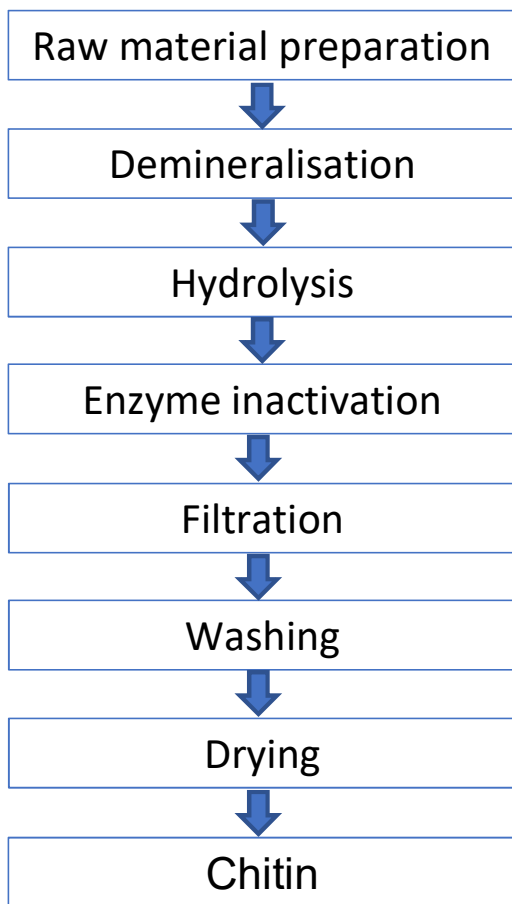
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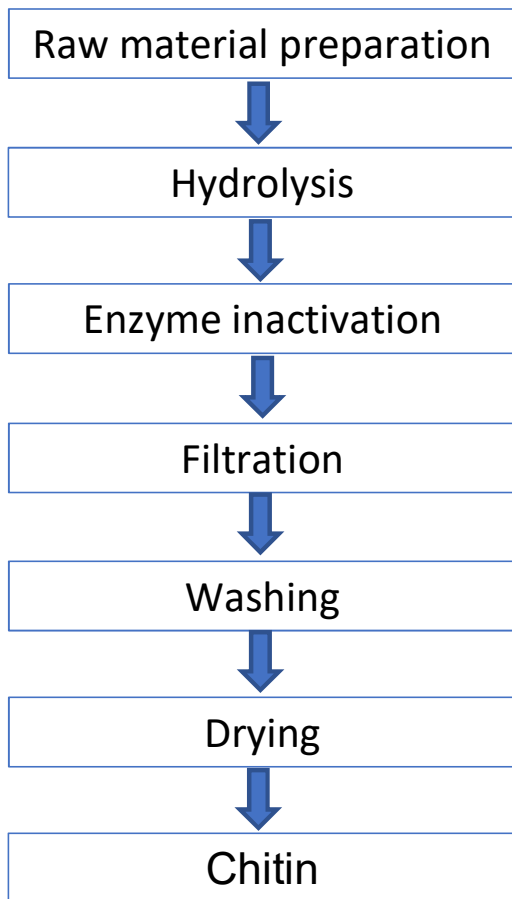
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# Initial optimisation, adapting methods from literature



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Effects of process conditions:

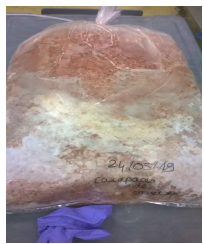
- Enzyme
- Incubation time
- Temperature
- pH

=> Optimal conditions  
(Alcalase, 5 H, pH 8.5, 55°C)





# Chitin extraction at pilot scale



Frozen shrimp shells (25 kg, 27% DM)



Grinding



Grinded shells:  
water  
1:3



2 step extraction process  
Total volume = 74 L

**Demineralisation**  
( $H_3PO_4$ , 3h, 35°C)  
**Deproteination**  
(Alcalase, pH 8.5, 10 H)



Washing



Drying



Final product  
(975 g, 98% DM)

This project has received funding from the Interreg 2 Seas Programme 2014-2020 co-funded by the European Regional Development fund under subsidy contract No 2S03-046 Horti-BlueC



# Extracted chitin characteristics

Sample	Dry matter (%)	Protein (%)	Ash (%)
Shrimp shells	26.96 ± 0.87	28.40 ± 0.23	51.48 ± 0.75
Extracted chitin	97.71 ± 0.41	7.95 ± 0.15	0

- Dry matter yield ~ 15%.
- 72% deproteination





Thank you for your attention

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