建立家蠅蛹殼幾丁質及蛋白質之萃取方法

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近年來，昆蟲因低碳排放且蛋白質含量高而成為研究焦點，且其外骨骼富含幾丁質，本次研究所使用的原料家蠅蛹殼中，粗蛋白含量高達65% (乾重)，幾丁質含量約19.7% (乾重)，在幾丁質的製備過程中發現由於蛹殼蛋白質含量多且結構緊密，過往文獻中幾丁質製備方法並不適用於製備家蠅蛹殼之幾丁質，本研究以萃取魷魚軟骨幾丁質之方法為基礎進行改良，先以酸處理去除礦物質，接續熱鹼反應2 h後替換鹼液，進行此循環3次，接續去除色素後得到高純度的幾丁質，產率為35%，乙醯度為74.1%，CrI_{020}為87.3% (Table 1)。蛋白質萃取的部分則是以2 N NaOH配合低頻率超聲波，在50 ℃進行萃取，得蛹殼萃取蛋白質 (*Musca domestica* extracted protein, MCP)，產率為20.5%，其起泡力為15.6%，起泡穩定性為22.6 ± 8.34% (Table 2)。

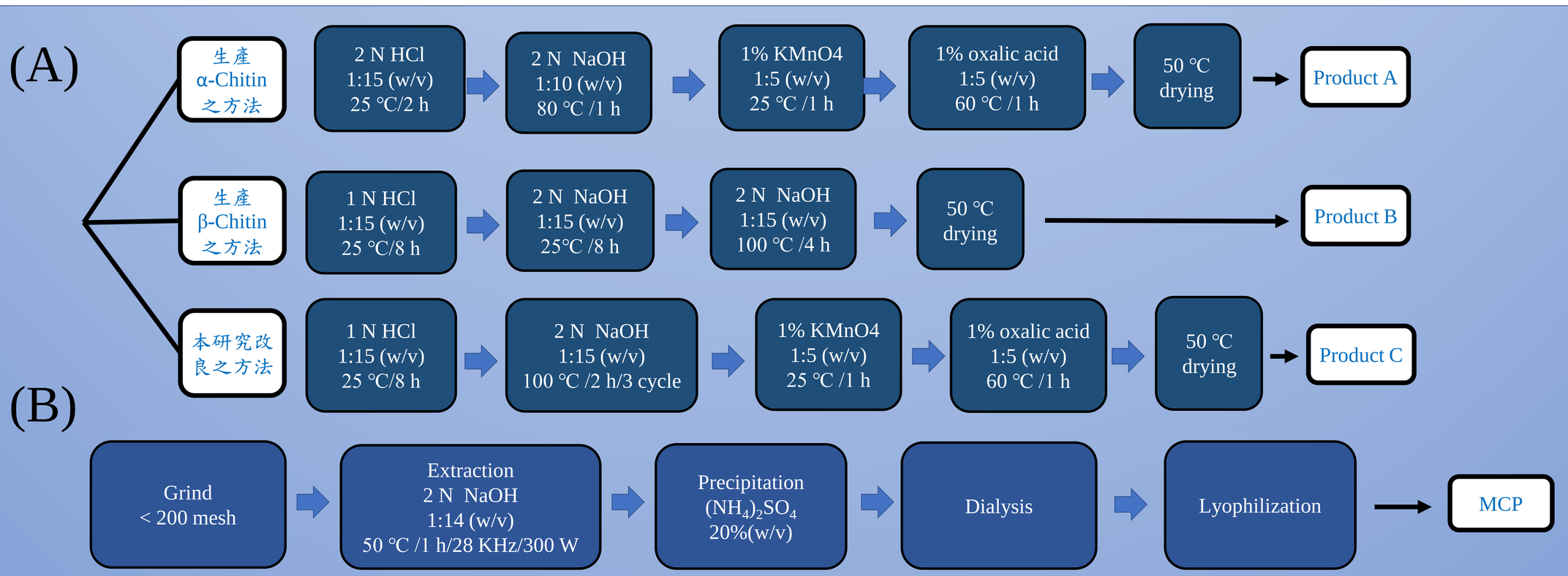

Fig. 1.(A) Three methods of extracting Chitin from *Musca domestica* cocoons , (B) methods of extracting Protein from *Musca domestica* cocoons.

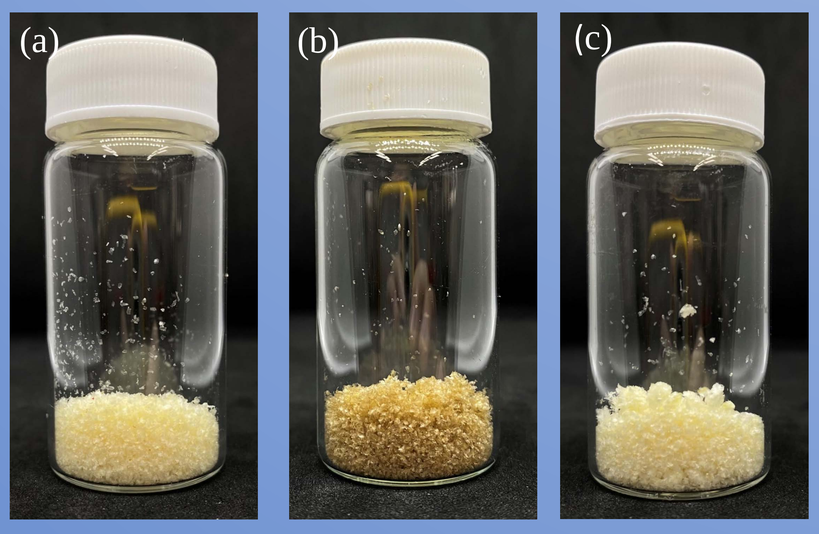

Fig. 2. Chitin purified from different way
(a) product A
(b) product B
(c) product C

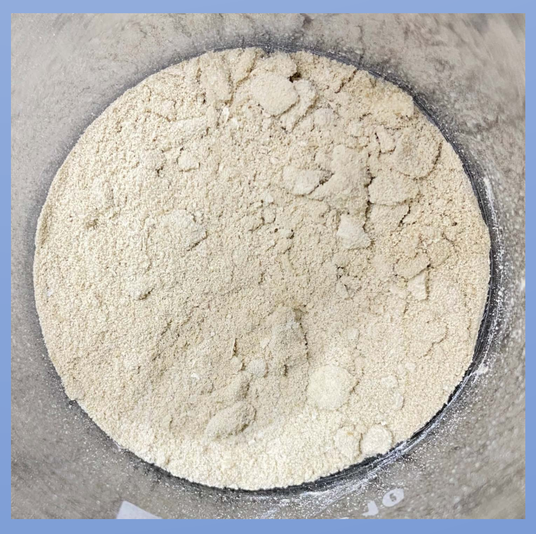

Fig. 4. Protein extracted from *Musca domestica* cocoons.

Table 1. Properties of chitin prepared by three methods.

	Product A	Product B	Product C
Ash (%)	0.3	0.025	0.075
Acetyl degree (%)	77.6	66.1	74.1
Crystallinity (CrI_{020})	79.3	71.6	87.3

Table 2. Functional properties of MCP.

Functional property	MCP
Foaming capacity (%)	15.6
Foam stability (%)	22.6 ± 8.34
WHC (g/g)	1.52 ± 0.08
OAC (g/g)	4.08 ± 0.1

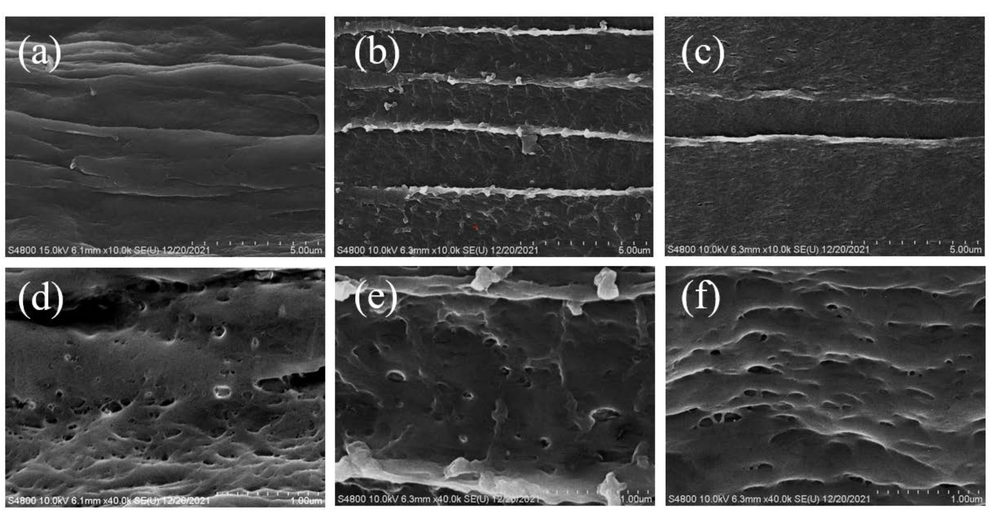

Fig. 3 . SEM images of purified Chitin, product A : (a)、(d) , product B : (b)、(e) , product C : (c)、(f).

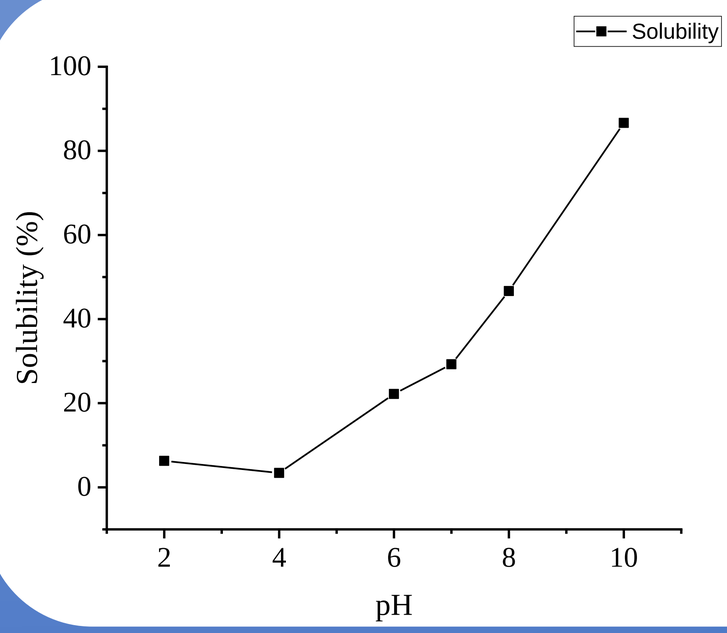

Fig. 5. Solubility of MCP at different pH.