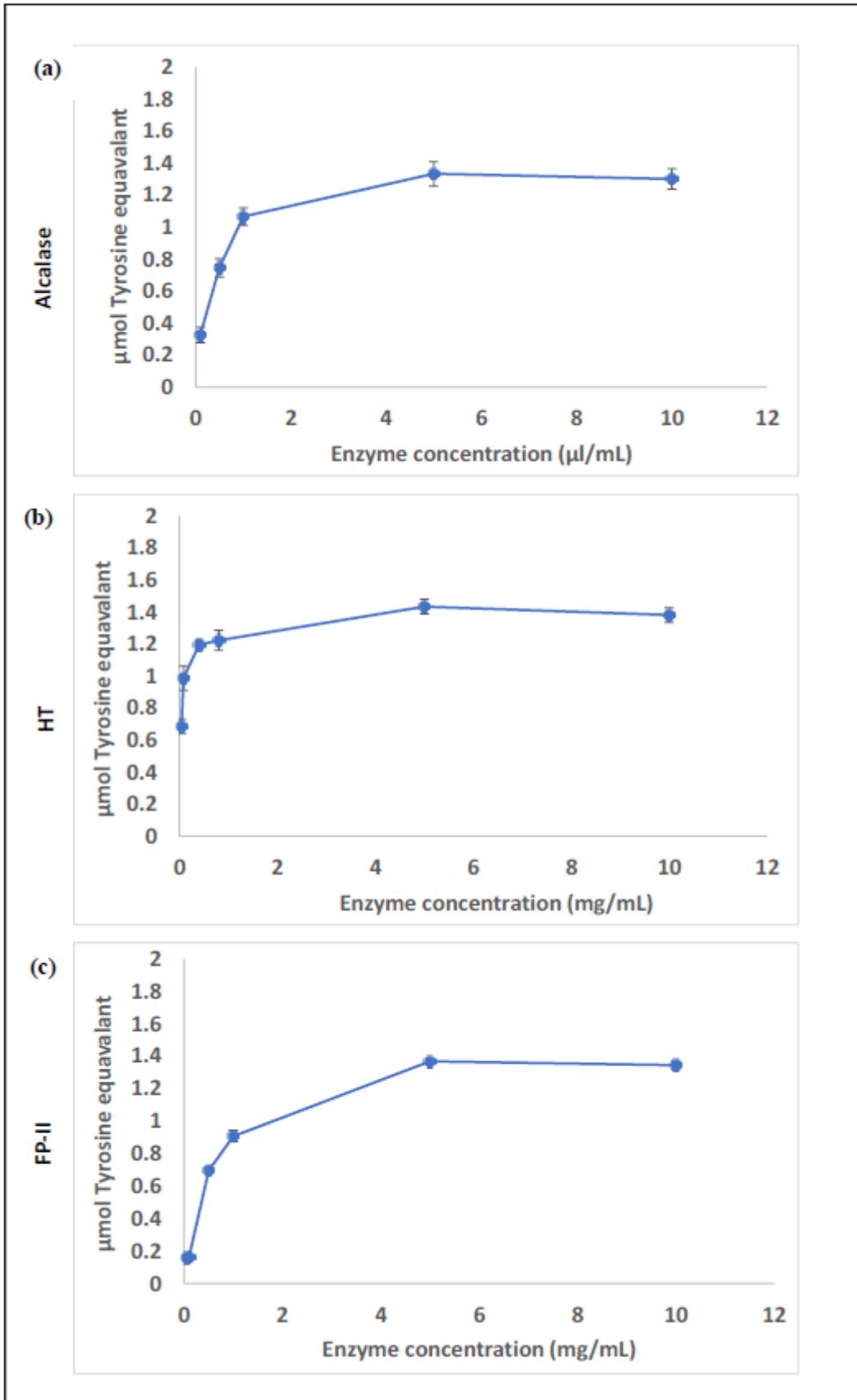


**Table S1.** Proximate composition (% of wet tissue) of New Zealand Hoki and Gemfish roe.

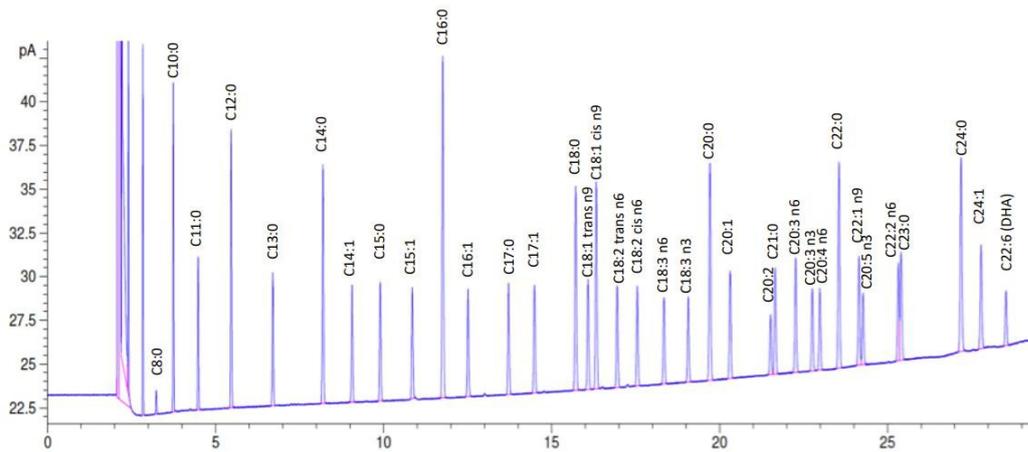
| <b>Items</b>       | <b>Moisture</b>          | <b>Lipid</b>             | <b>Protein</b>           | <b>Ash</b> | <b>Carbohydrate</b>     |
|--------------------|--------------------------|--------------------------|--------------------------|------------|-------------------------|
| <b>Hoki roe</b>    | 68.8 ± 0.38 <sup>A</sup> | 10.1 ± 0.65 <sup>A</sup> | 17.9 ± 0.72 <sup>B</sup> | 1.3 ± 0.12 | 1.9 ± 0.83 <sup>B</sup> |
| <b>Gemfish roe</b> | 63.2 ± 0.70 <sup>B</sup> | 7.6 ± 0.03 <sup>B</sup>  | 23.8 ± 0.74 <sup>A</sup> | 1.3 ± 0.06 | 4.2 ± 0.64 <sup>A</sup> |

Different superscript letters (<sup>A, B</sup>) in the same column indicate a significant difference ( $P < 0.05$ ). Carbohydrate content was determined by subtracting the sum of moisture, protein, lipid, and ash from 100%. Results are presented as mean ± standard deviation.

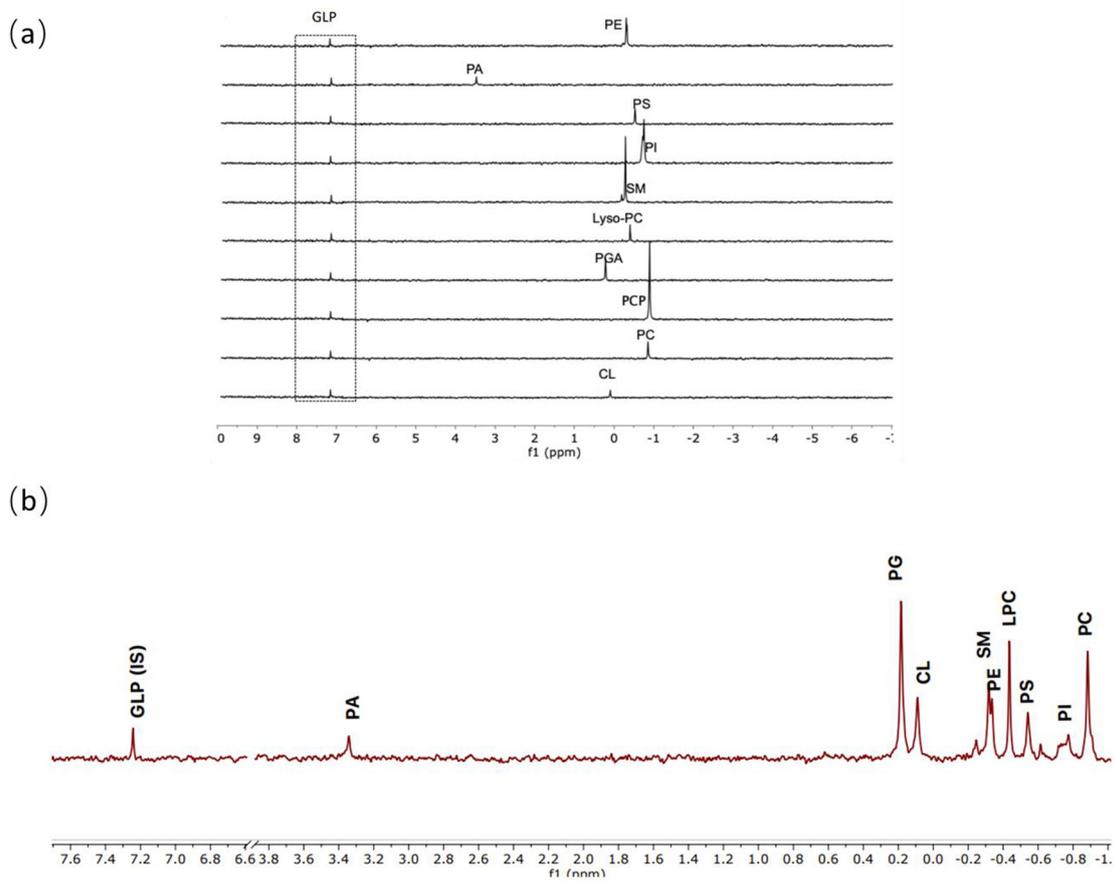


**Figure S1.** Casein hydrolysis as a function of enzyme hydrolysis using Alcalase (a), HT (b), and FP-II (c).

Protease (Alcalase, HT, and FP-II) hydrolysis at pH (7.0) and temperature (45 °C). The result of umol tyrosine equivalent was applied to indicate the activity of different protease concentration with 30 min hydrolysis. Alcalase was commercially provided as a solution concentration of the prepared stock solution; the enzyme solution was prepared alcalase (μl/mL), HT (mg/mL), and FP-II (mg/mL), as mentioned on the X-axis.



**Figure S2.** Analysis of commercial FAME standard by GC-FID



**Figure S3.** NMR analysis of individual phospholipid standards in D<sub>2</sub>O (a). Standard mix in D<sub>2</sub>O (b).

Abbreviations: PA= phosphatidic acid; PG= phosphatidylglycerol; CL= cardiolipin; PE= phosphatidylethanolamine; LPC= lyso-phosphatidylcholine; SM= sphingomyelin; PI=

**Table S2.** Summary of roe homogenate sample and enzyme formulation for time course hydrolysis

|                                     | Gemfish roe ( <i>w/w</i> or <i>v/w</i> ) | Hoki roe ( <i>w/w</i> or <i>v/w</i> ) |
|-------------------------------------|--|---------------------------------------|
| Frozen thaw-Alc                     | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Frozen thaw-HT                      | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Frozen thaw-FP-II                   | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Delipidation-Alc                    | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Delipidation-HT                     | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Delipidation-FP-II                  | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Freeze-dried-Alc                    | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Freeze-dried-HT                     | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Freeze-dried-FP-II                  | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Delipidation and Freeze-dried-Alc   | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Delipidation and Freeze-dried-HT    | 2%, 6% and 10%                           | 2%, 6% and 10%                        |
| Delipidation and Freeze-dried-FP-II | 2%, 6% and 10%                           | 2%, 6% and 10%                        |

-Alc, -HT, -FP-II: sample hydrolysis by protease alcalase, HT, and FP-II.

*w/w* and *v/w*: weight of protease/ weight of roe homogenate and volume of protease/ weight of roe homogenate.