

數種養殖魚不同部位嘌呤相關物質的分布

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摘 要

本研究針對養殖魚類吳郭魚、鱸魚和鯉魚等，就其不同魚體部位的嘌呤相關物質含量加以分析定量。結果顯示，鱸魚的平均總嘌呤含量為 $49.04 \pm 5.19 \mu \text{mole/g dry wt.}$ ，吳郭魚則含有 $42.26 \pm 3.09 \mu \text{mole}$ ，含量最低者為鯉魚的 $37.56 \pm 7.92 \mu \text{mole}$ ；三種魚類各部位間並無顯著差異 ($p > 0.05$)；其中次黃嘌呤(Hyp)含量佔總嘌呤含量的74-80%以上，吳郭魚和鱸魚的前腹部含較高的鳥糞嘌呤。各魚種的總游離嘌呤相關物質含量分別為鱸魚 $41.02 \pm 4.04 \mu \text{mole/g dry wt.}$ 、吳郭魚則含有 $36.16 \pm 4.01 \mu \text{mole}$ 和鯉魚的 $28.70 \pm 3.00 \mu \text{mole}$ ，其中以肌苷酸(IMP)為最高，其次為肌苷(Inosine)，各不同部位間的IMP多以背肉為最高，而Inosine則大多以腹部為較高，其餘游離嘌呤物質在不同部位間並無明顯的差異，顯示鱸魚、吳郭魚和鯉魚的核苷酸降解過程中皆屬IMP及Inosine蓄積型，其主要途徑可能為 $\text{ATP} \rightarrow \text{ADP} \rightarrow \text{AMP} \rightarrow \text{IMP} \rightarrow \text{Inosine} \rightarrow \text{Hypoxanthine}$ 。以總嘌呤含量扣除游

離嘌呤相關物質含量代表大分子嘌呤物質含量，顯示鱸魚含 $8.02 \pm 6.58 \mu \text{ mole/g dry wt.}$ ，吳郭魚則含 $6.10 \pm 5.05 \mu \text{ mole}$ ，而鯉魚則含有 $8.86 \pm 8.46 \mu \text{ mole}$ 。對痛風症患者的影響可能為鱸魚>吳郭魚>鯉魚,不同部位間可能背部肉較腹部肉的影響更顯著。

關鍵詞：嘌呤相關物質、魚體分布、吳郭魚、鱸魚、鯉魚

Distribution of purine related compounds in some cultured fish

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The purpose of this study was to investigate the purine content and free purine related compounds in different muscle parts of tilapia, sea perch and carp. The results indicated that the total purine content of sea perch was $49.04 \pm 5.19 \mu \text{mole/g dry wt.}$. Tilapia and carp contained $42.26 \pm 3.09 \mu \text{mole}$ and $37.56 \pm 7.92 \mu \text{mole}$ total purine contents, respectively. No significant difference ($p > 0.05$) was observed between the various muscle parts in each of fish. The major purine base of these three fish was Hyp, which was over 74-80% of total purine content. The highest guanine content located in frontier vetral part of tilapia and sea perch. The total contents of free purine related compounds in sea perch, tilapia and carp were $41.02 \pm 4.04 \mu \text{mole/g dry wt.}$, $36.16 \pm 4.01 \mu \text{mole}$ and $28.70 \pm 3.00 \mu \text{mole}$, respectively. IMP and inosine were the two highest free purine related compounds in these fish. The IMP dominated in dorsal muscle part, while the inosine in vetral muscle part. Besides, no significant difference ($p > 0.05$) of the other free purine related compounds between different muscle parts was observed. Since IMP and inosine accumulated in three fish, the pathway of ATP degradation might be proposed as the following route : $\text{ATP} \rightarrow \text{ADP} \rightarrow \text{AMP} \rightarrow \text{IMP} \rightarrow \text{Ino} \rightarrow \text{Hyp}$. The contents of high molecular purine substances were in the range of $6.10\text{-}8.86 \mu \text{mole/g dry wt.}$ Collectively, the increasing effect of human serum uric acid might be in order of sea perch > tilapia > carp; and the dorsal muscle part had a larger effect on serum uric acid level than vetral muscle part.

Key words: purine related compounds, various muscle part, tilapia,
sea perch, carp