

[5]

[6]

[6] 1

[7]

[8] 30 3~5 cm 7~9 cm

2~3 cm 50~80 g

[9]

[10] (1) 5 mm³
12~24 h 75%
75% 80% 85%

[11] 90% 95% 100% 100% (LEICA RM2016)

[5] 5 μm H.E
(OLYMPUS BX51)

10×40 AJ-VERT

5

[12] =

A × ×0.7 AJ-VERT

B

5 mm³
OCT 1 min

-20 (LEICA
CM1900) 8 μm
(OLYMPUS BX51)

-20

A smooth muscle B striated muscle

NADH-TR
NADH (NADH-TR)
()

(NADH-TR) 300 μL

ATP 300 μL NADH-TR

(1 1) (26.25±5.365) μm²
 () (40.45±10.083) μm²
 37 °C 30 min (< 0.01)
 5~10 min
 ()
 5 min(3)
 pH NADH-TR
 ATPase H⁺ NADH
 () ()
)
 37 °C 5 min ATPase 40 min NADH-TR
 1 min 5 min
 2 min ALP 2 NADH-TR
 min ATPase NADH
 ATPase
 () () (-3)
 ATP 80 °C 10 min () ()
 2 -4)
 ATPase ATP
 (-1) ATPase
 ATPase
 (-3)
 (-2) ATPase
 ()
 -4)
 3
 (-3)
 (-4)
 (5.97±0.631) μm
 (7.41±0.847) μm H.E
 (<0.01) (25 485.65±
 3917.807) /mm² (16 908.25±
 3917.807) /mm²

1

2

3

4

1. 2. 3. 4.

I

1. transverse sections of striated muscle; 2. longitudinal sections of striated muscle; 3. longitudinal sections of smooth muscle; 4. transverse sections of smooth muscle; black arrows represent the striated structure, blue arrow represents the nucleus

()

Audino ^[13]

()

Twarog ^[14]

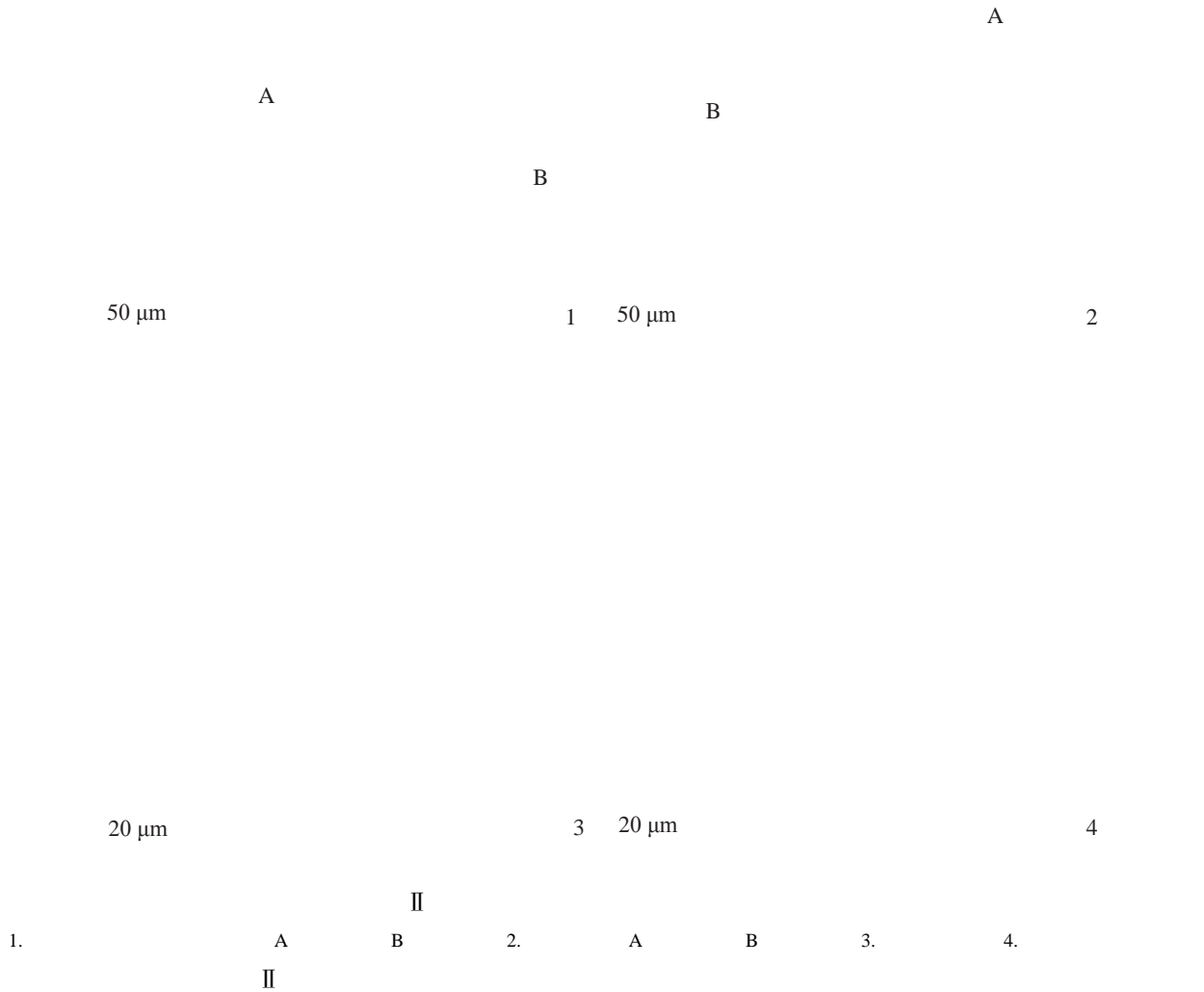
^[11]

()

10~100 μm^[15] Ayala ^[16]

Hanson ^[11]

^[17]

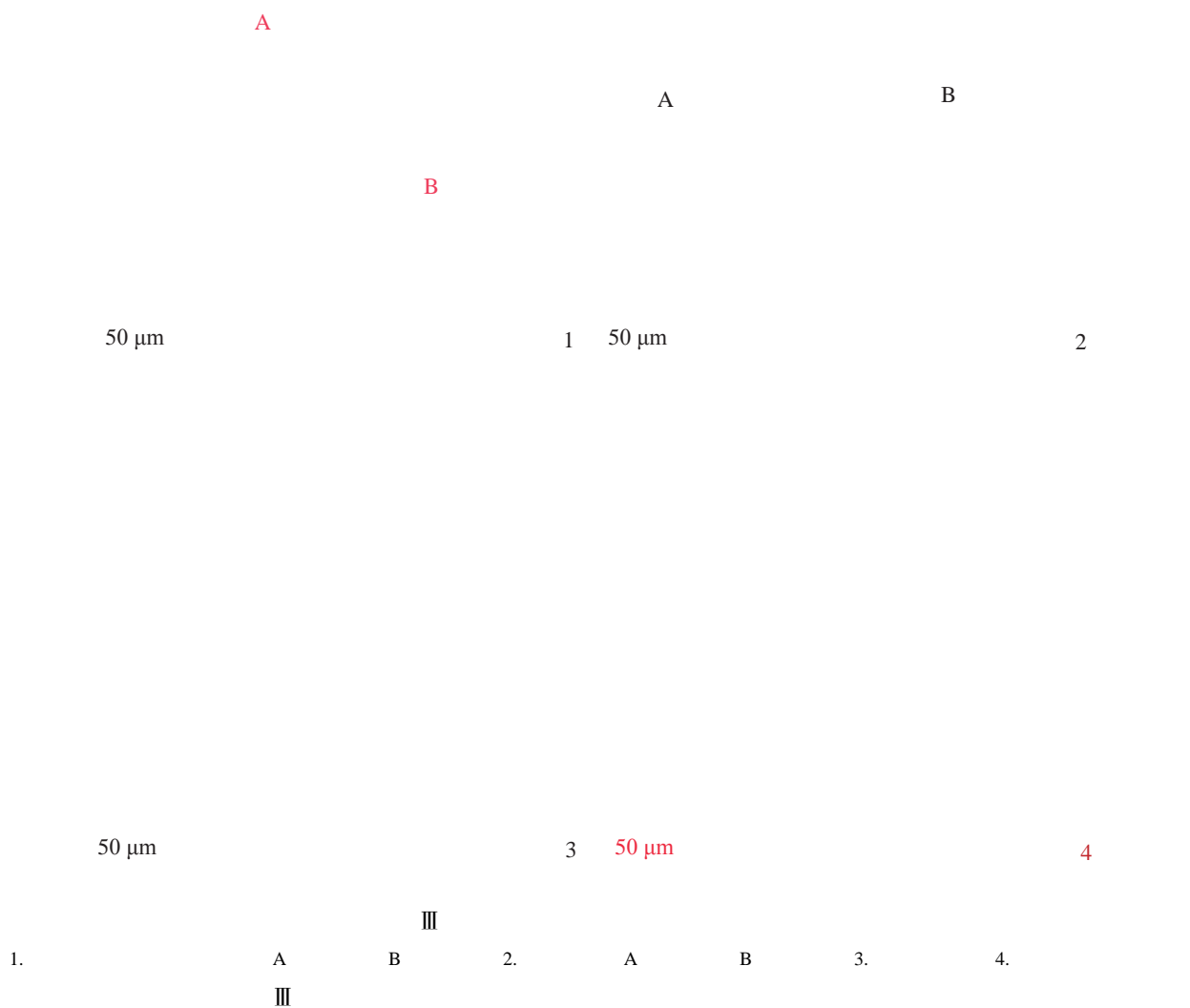


1. transection of adjacent smooth and striated muscle, A indicate smooth muscle, B indicate striated muscle; 2. negative control, A indicate smooth muscle, B indicate striated muscle; 3. transection of smooth muscle; 4. transection of striated muscle

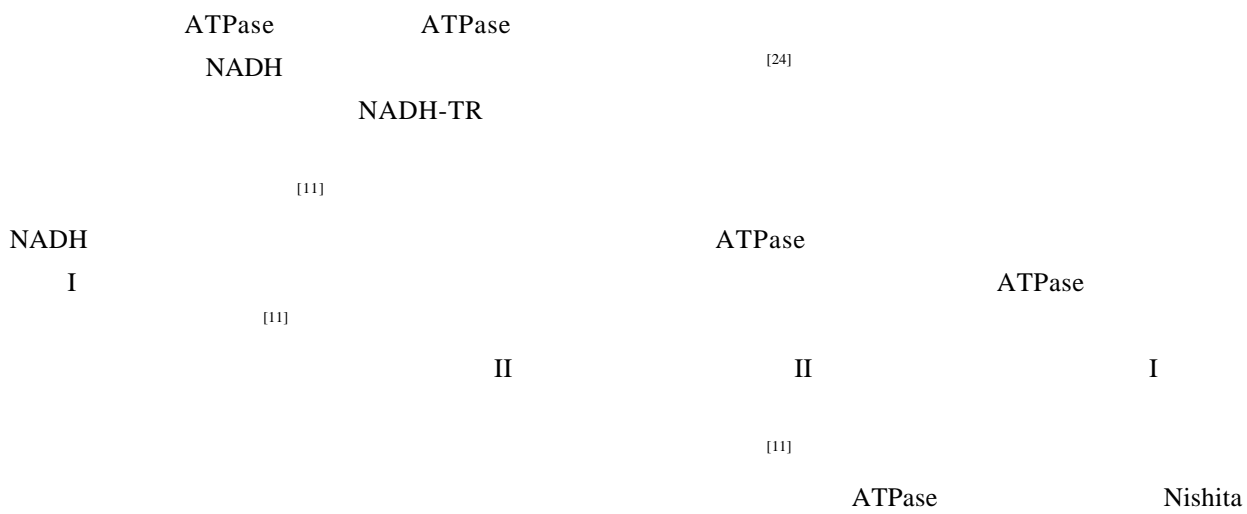
() NADH MDH ATPase [20] Brooke [21]
 ATPase I ()
) IIA () IIB()
 Aguiar [22] NADH-TR
 () GIFT)

[18] ATP
 NADH-TR

[19] Roy [23] ATPase
 NADH ()
 SDH NADH



1. transection of adjacent smooth and striated muscle, A indicate striated muscle, B indicate smooth muscle; 2. negative control, A indicate striated muscle, B indicate smooth muscle; 3. transection of smooth muscle; 4. transection of striated muscle



[25] ()

Guth [26] ATPase pH
ATPase
pH 10.4 4.4
I II
Johnston [27]

(pH)

()
ATPase

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Deng S M, Liao F C, Jiang G M, . The major factors influencing meat quality of aquatic animals during cultivation[J]. Chinese Journal of Animal Nutrition, 2011, 23(1): 15-19(in Chinese).
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Deng S M Q \$ etmoty illa arÛ ru M # ! a Z P]

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- fiber types in different species[J]. *Experimental Neurology*, 1971, 31(3): 408-418.
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: Paraffin embedded tissue section and hematoxylin-eosin staining were used to investigate the morphological characteristics of smooth and striated adductor muscles in . Muscle fibers were stained histochemically for NADH-diaphorase and adenosine triphosphatase activity (ATPase) to identify fiber types in smooth and striated muscles. The morphological characteristics of myofibers within smooth and striated muscles were compared by quantifying muscle diameter and cross-sectional area. Muscle fiber diameter in smooth muscle (5.97 μm) was significantly smaller than that in striated muscle (7.41 μm) (<0.05). Muscle fiber density of smooth muscle (25 485.65 \pm 3917.807 n/mm²) was significantly higher than that in striated muscle (16 908.25 \pm 3917.807 n/mm²). The cross-sectional area of myofibers in striated muscle (40.45 μm^2) was significantly greater than that in smooth muscle (26.25 μm^2 , <0.05). The result of NADH-TR histochemistry showed that the myofibers in smooth muscle were slow oxidative fibers (type I), as indicated by positive blue reat unstained by NADH-TR. ATPase histochemistry revealed that fibers in striated muscle were intensively stained and the fibers was type II with a high ATPase activity. The fibers in smooth muscle were lightly stained or unstained, suggesting the fibers were type I. The results of ATPase/NADH-TR staining were consistent. In this study, we firstly illustrated the morphological characteristics of myofibers in smooth and striated adductor muscles of , and compared the differences in contraction and metabolic profiles between smooth and striated muscles. This research not only provides important information for in-depth studies on biological characteristics of muscle fibers in , but also provides theoretical basis for improving the meat quality of molluscs.

: ; adductor; muscle fiber; NADH-TR; ATPase

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: Taishan Scholar Seed Industry Experts Plan Project; National Marine Public Welfare Research Program (201305005); Shandong Seed Project, and Shandong Province (2014GHY115002)