

DETERMINATION OF AMINOACID COMPOSITION IN ANDROGENIC GLAND HORMONE OF BARYTELPHUSA GUERINI

INTRODUCTION

The sex differentiation in crustaceans is known to be controlled by a peptide hormone called androgenic gland hormone (AGH). The androgenic gland (AG) is thought to be the exclusive organ that produces the androgenic hormone (AH) which induces male sexual development. The androgenic gland hormone has been described in a variety of crustacean species; Isopods, Amphipods and Decapods. The hormone is a glycosylated protein *Armadillidium vulgare* (King, 1964; Meusy, 1965; Malo and Juchault, 1970; Chaigneau and Juchault, 1979; Martin *et al.*, 1998, 1999; Okuno *et al.*, 1999, 2001; Sagi and Khalaila, 2001).

In *Armadillidium vulgare* AGH is a protein with disulfide bonds and three chains, A, B and C chains and were reported to have three forms of AH from the AG, AH1, AH2 and AH3 (Martin *et al.*, 1999; Okuno *et al.*, 1999).

In *Macrobrachium rosenbergii* the AGH contains A and B chains separated by a C peptide with 58 amino acids (Ventura *et al.*, 2009).

Hasegawa *et al.* (1987) suggested that the partially purified AGH of *Armadillidium vulgare* consists of two molecular forms, AGH I and AGH II.

It has structural homology to the insulin-like family of proteins, namely a signal peptide in its N' terminus with 27 amino acids, six cysteine residues and A and B chains separated by a C peptide with 58 amino acids with predicted arginine C-proteinase cleavage sites at both its N' and C' termini in *Macrobrachium rosenbergii* (Ventura *et al.*, 2009).

Type B-insulins have been isolated from *Caenorhabditis elegans* (Duret *et al.*, 1998, Ventura *et al.*, 2009).

In the terrestrial isopod, *Armadillidium vulgare* the purification and characterization of the AGH, in the elution profile showed the presence of Histidine, Arginine, Threonine, Alanine, Proline, Tyrosine, Valine, Methionine, Cysteine, Leucine, Phenylalanine, Lysine a total of 100 amino acids (Martin *et al.*, 1990).

In the present investigation, the study of different aminoacids was done to know the aminoacid composition of AGH.

MATERIAL AND METHODS

The adult, mature crabs with a carapace width of 45 to 55 mm and a weight of 35 to 45 gms were collected from their natural habitats and acclimated to the laboratory conditions. Observations were made on a minimum six animals and the average value was taken.

The amino acid composition of the AG was studied using uni-dimensional ascending paper chromatography (Wattman's filter paper).

RESULTS

The amino acids were found by ascending paper chromatography using Wattman's filter paper in the crude extract of AG of *Barytelphusa guerini* and they were namely Histidine, Serine, Alanine, Threonine, Proline, Tyrosine, Methionine, Valine, Tryptophan, Isoleucine and Phenylalanine which went into the composition of the protein hormone, AGH (Fig: 1).

Amino acids in crude extract of Androgenic gland

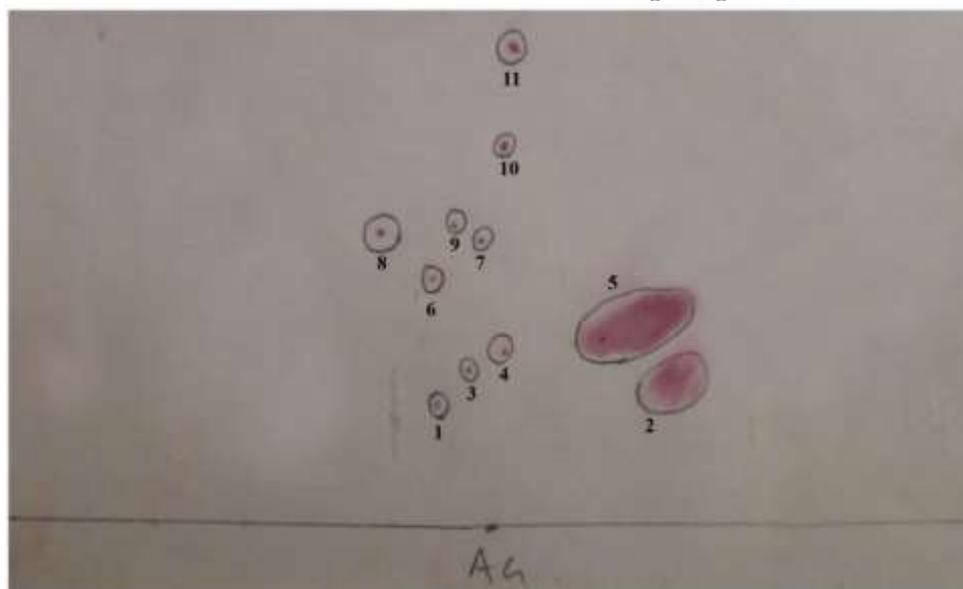


Fig. 1

1. Histidine
2. Serine
3. Alanine
4. Threonine
5. Proline
6. Tyrosine
7. Methionine
8. Valine
9. Tryptophan
10. Isoleucine
11. Phenylalanine

DISCUSSION

The androgenic gland hormone is a glycosylated protein *Armadillidium vulgare* (King, 1964; Meusy, 1965; Malo and Juchault, 1970; Chaigneau and Juchault, 1979; Martin *et al.*, 1998, 1999; Okuno *et al.*, 1999, 2001; Sagi and Khalaila, 2001).

The amino acids were found by ascending paper chromatography using Wattman's filter paper in the crude extract of AG of *Barytelphusa guerini*. they were namely Histidine, Serine, Alanine, Threonine, Proline, Tyrosine, Methionine, Valine, Tryptophan, Isoleucine and Phenylalanine which went into the composition of the protein hormone, AGH. This was also found in the purification and characterization of the AGH from the terrestrial isopod *Armadillidium vulgare* which in the elution profile showed the presence of Histidine, Arginine, Threonine, Alanine, Proline, Tyrosine, Valine, Methionine, Cysteine, Leucine, Phenylalanine, Lysine a total of 100 amino acids (Martin *et al.*, 1990).

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