金雞與白鷳血漿抑制素之季節性變化

陳陞輝 * 王淑音 **

摘要

本試驗利用羊之抑制素放射性免疫分析系統，建立野禽之抑制素放射性免疫分析法。此系統採用合成之抑制素片段 pI α (1-26) 誘導抗體，以 hI α (1-25) 作碘化，並以 oI α (1-25) 製作標準曲線。結果可測得正值繁殖期之雌性金雞與白鷳血漿中之抑制素，且使用 30ul 或 60ul 血漿所得之估算值亦呈劑量反應，此代表羊之抑制素放射性免疫分析系統正確地估算金雞與白鷳血漿中之抑制素含量。此外，無論金雞或白鷳，於繁殖季節，雌禽之抑制素分泌量皆明顯高於雄禽。而於非繁殖季節，雌禽之抑制素分泌量與雄禽則無顯著之差異。

本實驗初步應用已建立之禽類抑制素放射性免疫分析法於金雞、白鷳之繁殖季節變異之探討。日後擴大其應用，必有助於野禽之生殖生理之探討並與馴化家禽相互比較。

關鍵字：金雞，白鷳，抑制素，放射性免疫分析，繁殖季節。

前言

抑制素 (Inhibin) 是性腺分泌之蛋白質類激素，可經由負回饋方式抑制腦垂體分泌濾泡刺激素 (FSH)(Vale et al., 1988) 進而影響濾泡之發育 (Schwartz and Channing, 1977)。抑制素已由人類 (Charis et al., 1979)、羊 (Dobos et al., 1983)、牛 (Robertson et al., 1985)、豬 (Ling et al., 1985) 之濾泡液被分離與純化，發現其爲 α、β 兩個次單元所組成之醣蛋白。於哺乳類動物中，雌性是由濾泡的粒性細胞 (Granulosa cell) 分泌 (Findly et al., 1990; Hasegawa et al., 1981；Mann and Balrd, 1989；Martain et al., 1991；Tsonis et al.,1983)，而雄性是睪丸內的賽透利細胞 (Sertoli cell) 分泌。禽類之抑制素目前僅雞之抑制素 α-次單元之 cDNA(Wang and Johnson, 1993a) 及 β_A- 次單元之 cDNA (Chen and Johnson, 1996) 被選植成功並定序。其中 α-次單元序列與哺乳動物類似 (86%)，但類似程度低於哺乳動物彼此之間之差異。此外，鴨與鵝之抑制素雖尚未被分離，但利用雞之 α-次單元 cDNA 爲探針，已可測出鴨與鵝之卵巢粒性細胞皆表現相同之基因，其 mRNA 之大小約與雞同爲 1.7Kb(王等，1999)。

禽類血漿抑制素之偵測首由 Johnson et al. (1993) 利用牛之抑制素放射性免疫分析法，建立雞之系統並偵測到雞血中之抑制素並證實抑制素主由排卵前濾泡所分泌。王等 (1999) 改使用羊之抑制素放射性免疫分析法，測定鴨與鵝血中之抑制素，並發現繁殖季節之存在與否與禽類之抑制素分泌情形有極大之關聯性，且雄禽與雌禽之抑制素分泌模式亦有相當大之差異。金雞 (*Chyrsolophus picturs*, 俗名：Golden pheasant)、白鷳 (*Lophura nycthemera*, 俗名：Silver pheasant) 亦爲季節性繁殖之禽類，其繁殖季分別爲每年之四月至六月份及四月至五月份，其抑制素分泌模式之探討可提供家禽與野禽之間之比較，並進一步提供野生鳥類未來保育繁殖研究之參考。

材料與方法

* 中國文化大學生物科技研究所。
** 中國文化大學畜產系

Seasonal variation of plasma inhibin levels in Golden pheasant and Silver Pheasant

Shen-Hwei Chen* and Shu-Yin Wang**

Abstract

An avian inhibin radioimmunoassay was established in this experiment by modifying ovine inhibin radioimmunoassay. The ovine system used pI α (1-26) to induce antibody, and the hI α (1-25) was iodinated as a tracer, and the oI α (1-25) was used as reference for standard curve. The developed system can detect inhibin from plasma of female Golden pheasant and Silver pheasant during the breeding season and the estimated plasma inhibin levels of 30 ul and 60 ul were parallel to the standard curve, indicating the use of ovine inhibin radioimmunoassay is feasible in application in avian species. Using the validated assay, we found that plasma inhibin levels of both female Golden pheasant and Silver Pheasant were higher than that in males in breeding season. However, there was no significant difference between male and female in nonbreeding season. The avian inhibin radioimmunoassay established in our laboratory has been successfully applied in detecting inhibin from avian species. We expect to expand the use in comparison the reproductive physiology between domestic and wild birds in the future.

Key words : Golden pheasant, Silver pheasant, Inhibin, Radioimmunoassay, Breeding season.

* Institute of Biotechnology, Chinese Culture University

**Animal Science, Chinese Culture University, Taipei, Taiwan, R.O.C.