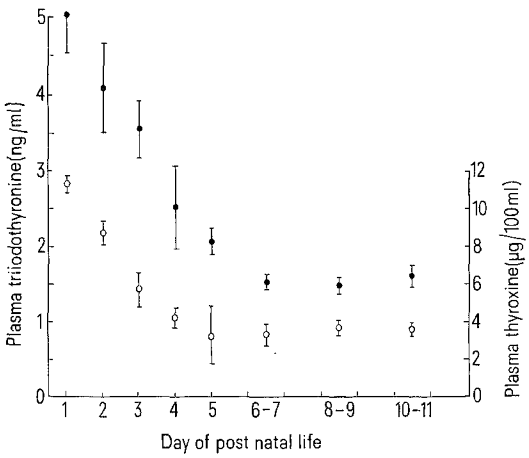
Plasma Triiodothyronine Concentration in the Newborn Calf

In the first days of extra-uterine existence rapid changes occur in the level of function of the pituitary-thyroid axis in many species. In the calf, plasma thyroxine concentration is high on the first day of life and falls rapidly in the early neonatal period. This decrease in plasma concentration is accompanied by a period of decreased turnover of exogenous labelled thyroxine injected into the circulation and a decreased peripheral utilization of thyroxine per kg body weight[1,2]. During this period there is also a decrease in the proportion of circulating thyroxine that is free or dialysable (A.L. THOMAS, unpublished observations).



Ordinates: plasma thyroxine (○) and plasma triiodothyronine (●) concentrations in the newborn calf. Abscissa: age after birth in days. Individual points are the means and S.E.M. of at least 7 calves.

Using a radioimmunoassay for triiodothyronine in plasma[3], plasma triiodothyronine concentration has been measured in the newborn calf (Figure). Plasma thyroxine was measured in the same samples by competitive protein binding[4]. The triiodothyronine: thyroxine ratio (expressed as ng/ml T_3: μg/100 ml T_4) is 0.43 ± 0.06 (mean $\pm$ sem; $n = 7$) on day 1. It rises to a maximum of 0.67 ± 0.08 on day 5, falling again to 0.45 ± 0.06 on day 8–9. The source of plasma triiodothyronine may be either direct secretion of triiodothyronine from the thyroid or peripheral conversion of thyroxine to triiodothyronine. Triiodothyronine is 3–4 times as potent as thyroxine in man[5]. It is therefore possible that more efficient production of triiodothyronine is responsible for the decline in the overall utilization of thyroxine.

Résumé. On a mesuré le taux de triiodothyronine et de thyroxine dans le plasma du veau nouveau né pendant ses premiers 11 jours. Le ratio d T_3:T_4 a eu son maximum au 5e jour.

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The Nutritional Status and Radiosensitivity of Some *Cicer arietinum* L. Cultivars

Amongst pulses; the chickpea (*Cicer arietinum* L.) plays an important economic role, with an acreage next to rice and wheat. It has, however, a surprisingly low yield[1], predominantly due to a poor genetic make-up in the existing varieties, poor cultural practices, and susceptibility to disease and insect pests. Induced mutation breeding for high yield and/or pod borer resistance in *Cicer arietinum* L. without adversely affecting the nutritional status appears promising as such applications have already led to improved yield potentials in several other crops[2–4]. This paper deals with estimating the nutritional status and radiosensitivity of the 3 predominant *Cicer arietinum* L. cultivars (C-612, Sanyasi, and Chhola) to acute γ-irradiation exposures before induced mutagenesis studies are undertaken.

Material and methods. One-year-old seeds of *Cicer arietinum* L. cultivars C-612, Sanyasi, and Chhola; obtained from Dokri Rice Research Station, Dokri, Pakistan; were used to determine the nutritional status and radiosensitivity.

Nutritional evaluation. 50 g seed samples of cultivars C-612, Sanyasi, and Chhola, were ground on a micro sample mill to pass through a 40 mesh sieve size and stored in air-tight containers. Standard procedures for moisture and Kjeldahl protein[5], sample hydrolysis[6] and amino acid analysis[7] were adopted.

Radiosensitivity evaluation. 8 seed lots of 100 seeds for each cultivar were prepared and given single γ-irradiation exposures of 2.5, 5.0, 7.5, 10.0, 15.0, 20.0 and 25.0 kR from a ^{60}Co 100 Ci source. Dose rate was 70 R/min at 10 cm distance. Lot 8 served as the control. The seeds were planted immediately in coarse sand and maintained under laboratory conditions. The planting design was a randomized complete block, with 25 seeds per treatment and replication. Observations for seed germination and seedling height were recorded 14 days from planting. D_{50} was determined according to OSBORNE and LUNDEN's[8]

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