

WISSENSCHAFTLICHE KURZMITTEILUNG

The karyotype of *Hemiechinus auritus calligoni* from Turkey

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The long-eared hedgehog *Hemiechinus auritus* (Gmelin, 1770) is characterised not only by its phenotypic variability, but also by a chromosomal polymorphism. Despite this interest fact, little attempt has been made thus far to determine the extent by which the conventional subspecies correspond with the different chromosomal races. This species is of very marginal occurrence in Turkey, from whence two subspecies have been recognised to date: *H. a. dorotheae* Spitzenberger, 1978, from Cyprus is probably a human introduction (BOYE 1991), whilst *H. a. calligoni* (Satunin, 1901) is considered to occur in south-eastern Anatolia, Iraq, Syria and Jordan (HARRISON and BATES 1991). The aim of this study is to describe the chromosome set in material that is topotypical with *H. a. calligoni* (type locality is Aralik (İğdir) on the Turkish-Iranian border).

Three specimens were collected between 1991–1993 in eastern Turkey: a male and a female at Aralik (İğdir), and a female at Gaziantep. Standard flame-dried chromosome preparations were made directly from the bone marrow of colchicine-treated animals (FORD and HAMERTON 1956). Ten slides were studied for each specimen, with at least 50 metaphase cells being examined. Chromosomal nomenclature follows LEVAN et al. (1964).

In all three specimens the diploid chromosome number was $2n = 48$, the fundamental chromosome number $NF = 94$, and the number of autosomal arms $NFa = 90$. Four groups of autosomes were recognised: (1.) ten metacentrics, (2.) seven submetacentrics, (3.) five subtelocentrics, and (4.) one small acrocentric (Fig. 1). The largest pair of autosomes was subtelocentric (pair 18 in Fig. 1), followed by two pairs of large metacentrics (pairs 1 and 2, respectively). The karyotype is also characterised by two pairs of very small autosomes (numbers 10 and 17 in Fig. 1). The X chromosome was metacentric, and the Y chromosome was a very small metacentric.

The diploid number of 48 chromosomes was also found in the other long-eared hedgehog populations studied so far, and is widespread in the entire family Erinaceidae, *Erinaceus amurensis* being the only exception (ŽIMA and KRÁL 1984). Despite this, the long-eared hedgehog does show inter-population differences in the position of the centromere. ORLOV (1969) reported only bi-armed autosomes in the karyotype of *H. auritus* from Dagestan. This included a pair of very large subtelocentrics, two pairs of metacentrics, and two pairs of very small bi-armed chromosomes. The X chromosome was metacentric, and the Y chromosome was bi-armed and very small. GROPP et al. (1969) reporting on long-eared hedgehogs from Afghanistan and Egypt, also found a very large pair of subtelocentrics, two pairs of large metacentrics, and two pairs of very small metacentrics. Of the remaining autosomes, all 18 pairs were bi-armed (meta- to submetacentric) in Afghanistan animals, whilst there were 17 bi-armed pairs in hedgehogs from Egypt. No interpopulational differences exist in the heterosomes: the X is submetacentric, and the Y is very

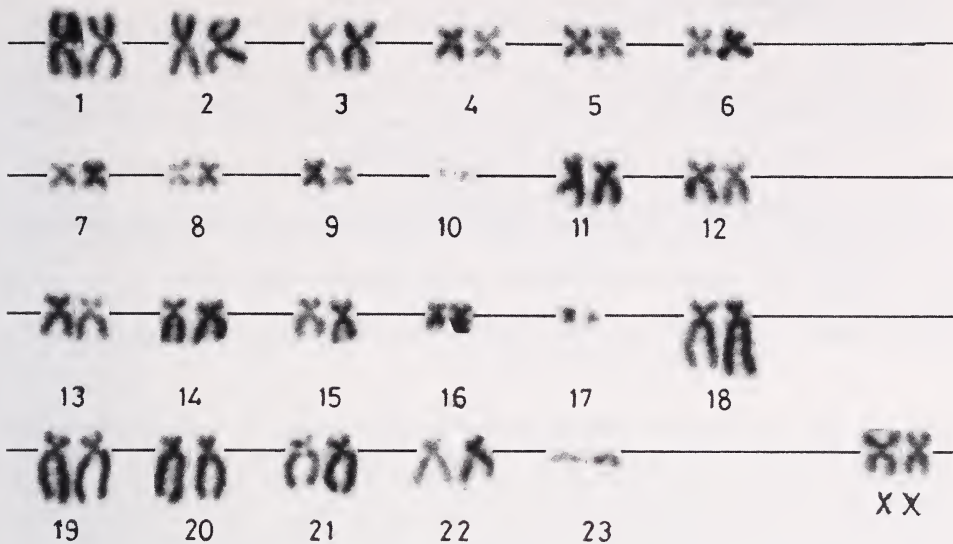


Fig. 1. Standard karyotype of a female *Hemiechinus auritus calligoni* from Aralik, Turkey.

small and bi-armed. The karyotype of Iraqi long-eared hedgehogs is characterised by a pair of very large subtelocentrics and two pairs of very small metacentrics. Of the remaining 38 autosomes, four pairs were subtelocentric and the rest were metacentrics. The X chromosome was metacentric and the Y chromosome was very small and bi-armed. Similar results were found also in populations from India (SHARMA et al. 1975; SOBTI and GILL 1980) and Turkmenistan (ZIMA and KRÁL 1984).

A pair of acrocentrics seems to be peculiar to long-eared hedgehogs from eastern Turkey, not having been found elsewhere. Furthermore, of the two pairs of very small autosomes (pairs 10 and 17 in Fig. 1), one was metacentric and the other was subtelocentric. SHARMA et al. (1975), SOBTI and GILL (1980), and ZIMA and KRÁL (1984) all consider both to be metacentrics.

HARRISON and BATES (1991) ascribed Iraqi *Hemiechinus auritus* to the subspecies *calligoni*. Karyological evidence does not support this step because of differences in the autosome morphology between Iraqi and Turkish long-eared hedgehogs. The karyotype found in topotypes of *H. a. calligoni* is known presently only from eastern Turkey.

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References

- BOYE, P. (1991): Notes on the morphology, ecology, and geographic origin of the Cyprus long-eared hedgehog (*Hemiechinus auritus dorotheae*). Bonn. zool. Beitr. **42**, 115–123.
- FORD, C. E.; HAMERTON, J. L. (1956): A colchicine, hypotonic citrate, squash sequence for mammalian chromosomes. Stain Technol. **31**, 247–251.

- GROPP, A.; CITOLER, P.; GEISLER, M. (1969): Karyotyp-variation und Heterochromatinmuster bei Igeln (*Erinaceus* und *Hemiechinus*). *Chromosoma* (Berlin) **27**, 288–307.
- HARRISON, D. L.; BATES, P. J. J. (1991): *The mammals of Arabia*. 2nd ed. Sevenoaks: Harrison Zool. Museum Publ.
- LEVAN, A.; FREDGA, K.; SANDBERGER, A. (1964): Nomenclature for centromeric position on chromosomes. *Hereditas* **52**, 201–202.
- ORLOV, V. N. (1969): Chromosome complement of the hedgehogs from East Europe. In: *Mat. II. vsesoj. sov. po mlekopit.* Ed. by N. N. Vorontsov. Pp. 6–7. (In Russian).
- SHARMA, G. P.; MITTAL, O. P.; SOBTI, R. C. (1975): Karyotype and chiasma frequency in the Indian hedgehog, *Hemiechinus auritus collaris*. *Caryologia* **28**, 149–156.
- SOBTI, R. C.; GILL, S. S. (1980): Chromosome number in fifteen mammals from India. *Mamm. Chrom. Newsletter* **21**, 107.
- ZIMA, J.; KRÁL, B. (1984): Karyotypes of European mammals I. *Acta Sc. Nat. Brno* **18**, 1–51.

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