C BANDS AND NUCLEOLAR ORGANIZER REGIONS (NORS) OF *MICROTUS DOGRAMACII* KEFELIOĞLU & KRYŠTUFEK, 1999 (RODENTIA: CRICETIDAE) FROM BLACK SEA REGION

İrfan Albayrak*, Nursel Aşan Baydemir* and Serdar Gözütok*

* University of Kırıkkale, Faculty of Science and Art, Department of Biology, 71450 Yahşihan, Kırıkkale, TURKEY. E-mails: iralbayrak@hotmail.com, nurselasan@kku.edu.tr, serdar_gozutok@hotmail.com

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ABSTRACT: This study is based on the C and Ag-NOR banded chromosomes of *Microtus dogramacii* from the type locality. The species possesses a karyotype of 2n=48, NFa= 48 and NF=52. The X chromosome was medium-sized metacentric while the Y chromosome was acrocentric. NORs were located in the centromeric regions of four pairs of acrocentric chromosomes.

KEY WORDS: C bands, Nucleolar Organizer Regions, *Microtus dogramacii,* Rodentia, Black Sea Region, Turkey.

The genus *Microtus* is represented with nine species in Turkey, *Microtus anatolicus*, *M. arvalis*, *M. daghestanicus*, *M. dogramacii*, *M. guentheri*, *M. levis*, *M. majori*, *M. socialis* and *M. subterraneus* (Çolak et al., 1997; Kefelioğlu & Kryštufek, 1999; Kryštufek & Kefelioğlu, 2001; Yiğit & Çolak, 2002; Musser & Carleton, 2005; Mitsainas et al., 2009). Of them, both *Microtus anatolicus* and *M. dogramacii* are refereed as endemic species in Turkey. Dogramacı's vole is first described from Amasya by Kefelioğlu & Kryštufek in 1999. This species is clearly distinguishable from *M. socialis* in Turkey with respect to its karyotype, external and cranial characters (Kefelioğlu & Kryštufek, 1999; Kryštufek & Vohralík, 2001; Şekeroğlu et al., 2011).

This study aims to make a contribution to the banded karyotype of *Microtus dogramacii* from Black Sea Region.

MATERIAL AND METHODS

Three male specimens were captured by Shermann traps from the type locality, Amasya as topotype specimens. Chromosome preparations were obtained from bone marrow cells according to the technique of Ford and Hamilton (1956). The C-heterochromatin distribution and location of NORs were determined using the techniques of Sumner (1972) and Howell & Black (1980), respectively. The diploid chromosome number (2n), autosomal fundamental number (NFa) and fundamental number (NF) were determined. All stuffed skins andmetaphase slides are deposited at the Department of Biology, University of Kırıkkale.

RESULTS

The specimens examined displayed 2n=48, NFa=48 and NF=52. The karyotype consisted of 22 pairs of acrocentric decreasing in size and one pair of metacentric. The X chromosome was medium-sized metacentric while the Y chromosome was medium sized acrocentric (Fig.1).

Large and clear C-heterochromatin blocks are located in the pericentromeric areas, including the X and Y chromosomes (Fig. 2).

Nucleolar organizer regions were homomorphic and located in the centromeric regions of eight large, medium-sized or small acrocentric autosomes (Fig. 3).

DISCUSSION

The conventionally stained karyotype of *Microtus dogramacii* from the type locality and Konya province was first described by Kefelioğlu & Kryštufek (1999). To date, the conventionally and G- and C-banded karyotypes of this species were reported by Lemskaya et al. (2010) and Şekeroğlu et al. (2011).

According to Kryštufek & Vohralík (2001) the chromosomes of *M. dogramacii* were polymorphic. Kefelioğlu & Kryštufek (1999) recorded that the diploid chromosome number was 2n=48 in all examined specimens from Amasya and Konya provinces although the autosomal fundamental number of the chromosomes varied (NFa= 46, 48 and 50) in the populations. The specimens from Konya province represented a karyotype with NFa= 46 while NFa=46, 48 and 50 have been found from the Amasya population. Later, Şekeroğlu et al. (2011) reexamined the karyotypic forms from Amasya province. According to the later authors two karyotypic forms are presented in the area. Cytotype-1 with 2n=48, NFa= 46 and NF=50 and Cytotype-2 with 2n=48, NFa= 48 and NF=52. The variation in the NFa was due to pericentric inversions.

In this study we examined the cytotype-2 karyotypic form with one pair of metacentric and 22 pairs of acrocentric chromosomes decreasing in size. The C-bands and the location of NORs are compatible with the data given by Şekeroğlu et al. (2011).

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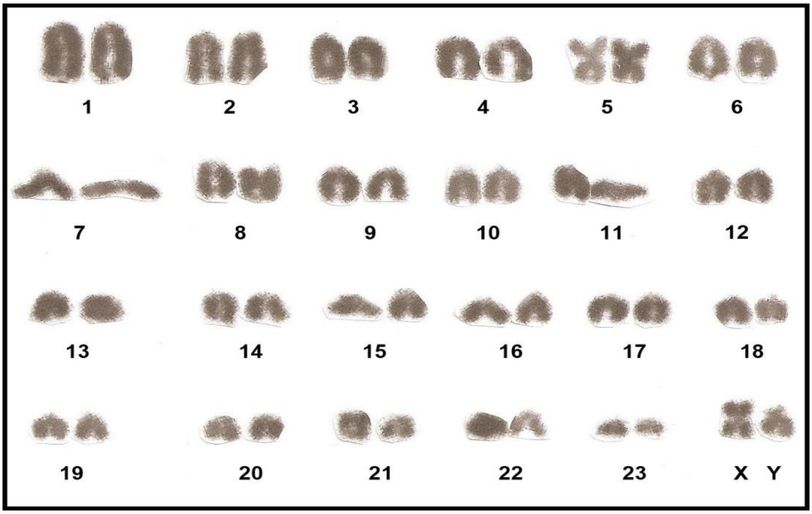

Figure 1. Conventionally stained karyotype of *Microtus dogramacii.*

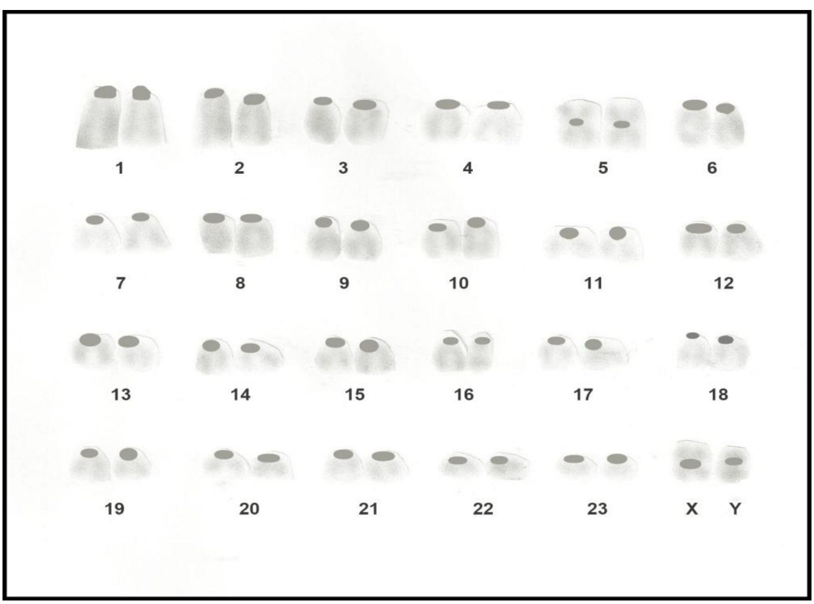

Figure 2. C-banding karyotype of *Microtus dogramacii.*

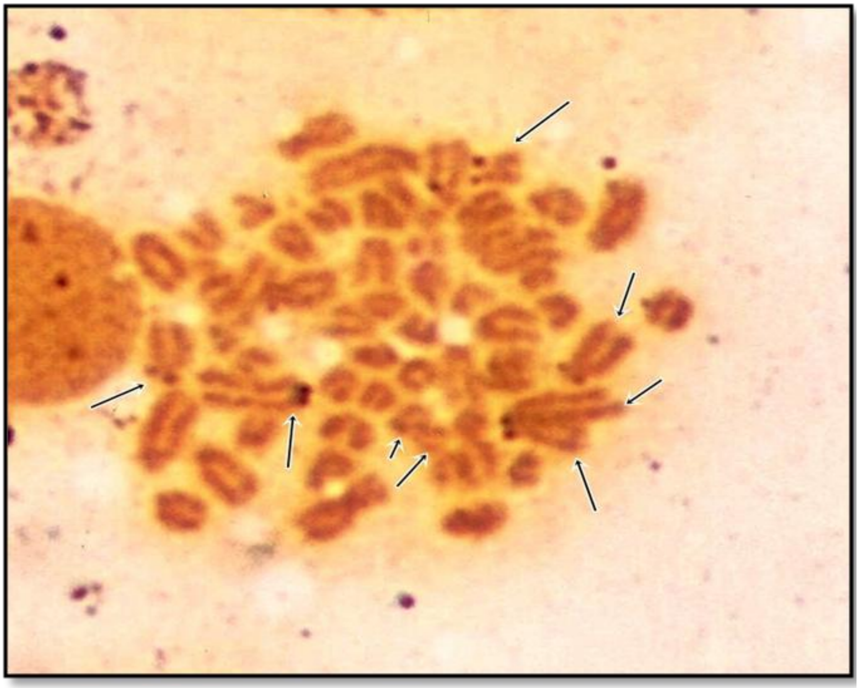

Figure 3. Ag-NOR banded metaphase plate (Arrows indicate the NOR-bearing chromosome pairs) of *Microtus dogramacii* from Amasya province.