Journal of King Saud University (Science) (2010) **22**, 73–76

King Saud University
Journal of King Saud University (Science)
www.ksu.edu.sa
www.sciencedirect.com

ORIGINAL ARTICLE

First report of the karyotype of *Bufo dhufarensis* from Saudi Arabia

A.H. Al-Shehri [a], A.A. Al-Saleh [b,*]

[a] *Ministry of Interior, Public Security, Criminal Evidence Administration, P.O. Box 271198, Riyadh 11352, Saudi Arabia*
[b] *Department of Zoology, College of Science, King Saud University, P.O. Box 2455, Riyadh 11451, Saudi Arabia*

Received 2 January 2010; accepted 26 January 2010
Available online 6 February 2010

KEYWORDS
Amphibian;
Karyotype;
Chromosome;

Abstract We report for the first time the description of the karyotype of the Dhufar toad *Bufo dhufarensis* from Saudi Arabia. This karyotype consists of 22 chromosomes and could be classified into two categories; eight pairs of metacentric and three pairs of submetacentric chromosomes. The 10th pair of this karyotype has a secondary constriction on the long arms of both male and female chromosomes. The fundamental number of this species is 44.

1. Introduction

It is of a surprise to find several amphibian species abundant to a harsh environment such as in the Arabian Peninsula. The work of Balletto et al., 1985 is considered as the more precise surveys dealing with the morphological and classification of Arabian anura. However, there are few research on the distribution of frogs and toads in kingdom of Saudi Arabia and neighboring country such as Yemen (Schmidt, 1953; Hass, 1957, 1961; Briggs, 1980, 1981).

According to the literatures, *Bufo arabicus* is the first toad to be classified from the region (Heyden, 1827) but recent research on the amphibian chromosomes of the Arabian Peninsula has just started, and few paper have been published (Al-Shehri and Al-Saleh, 2005a,b, 2008).

Therefore, it is very important to study and protect such creatures because they are under grave threat not only due to general habitat alteration but also to climate change, pollutant and the emergence of deadly and infectious diseases such as fungal disease which has been due to global warming. Amphibian and reptile populations have declined by 75% since 1970, which indicate to the extinction danger that amphibian might face in the near future (Whitfield et al., 2007).

In this paper we are going to describe for the first time the diploid number of chromosomes for *Bufo dhufarensis* from Kingdom of Saudi Arabia using bone marrow cells treated with colchicine *in vivo*.

2. Materials and methods

Samples of males and females of *B. dhufarensis* Parker were collected from Al-Derayya village, Riyadh province of Kingdom of Saudi Arabia. Each sample was injected interaperitoneal with 0.2 ml of colchicine solution (1 mg/ml)

* Corresponding author.
E-mail address: azsaleh@ksu.edu.sa (A.A. Al-Saleh).

1018-3647 Peer-review under responsibility of King Saud University.
doi:10.1016/j.jksus.2010.02.003

Production and hosting by Elsevier

for 24 h before being killed. Chromosome preparations followed the method described by Al-Shehri and Al-Saleh (2008) and well-spread metaphases chromosomes were analyzed and photographed. The nomenclature proposed by Levan et al. (1964) was followed for the classification of each homologous pair.

3. Results

For the first time we report and describe the karyotype of *B. dhufarensis*, which has been collected from Riyadh region, Kingdom of Saudi Arabia. The karyotype consists of 22 chromosomes, eight pairs of metacentric and three pairs of submetacentric chromosomes (Figs. 1 and 2).

The measurement of the length of the chromosomes is calculated for seven different karyotypes and the relative length is represented in Table 1. Metacentric chromosomes are classified according to their length to three types:

1. Chromosomes 1–3 are large size chromosomes.
2. Chromosome 4 is medium size chromosomes.
3. Chromosomes 5–8 are small size chromosomes

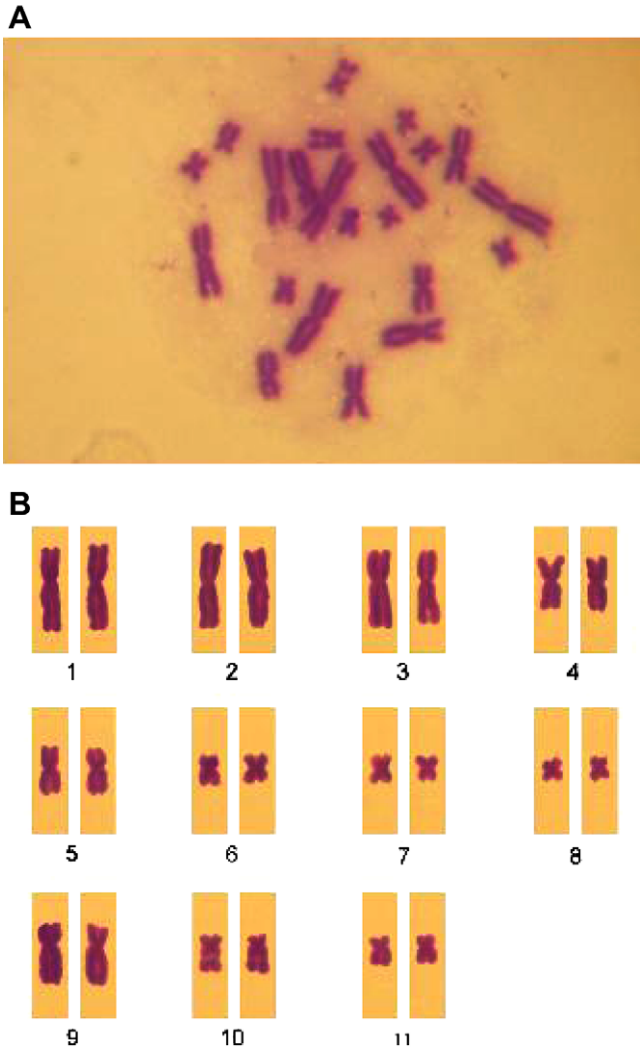

Figure 1 (A) Photomicrograph of metaphase spreading from male *B. dhufarensis*. (B) Karyotype of male *B. dhufarensis*.

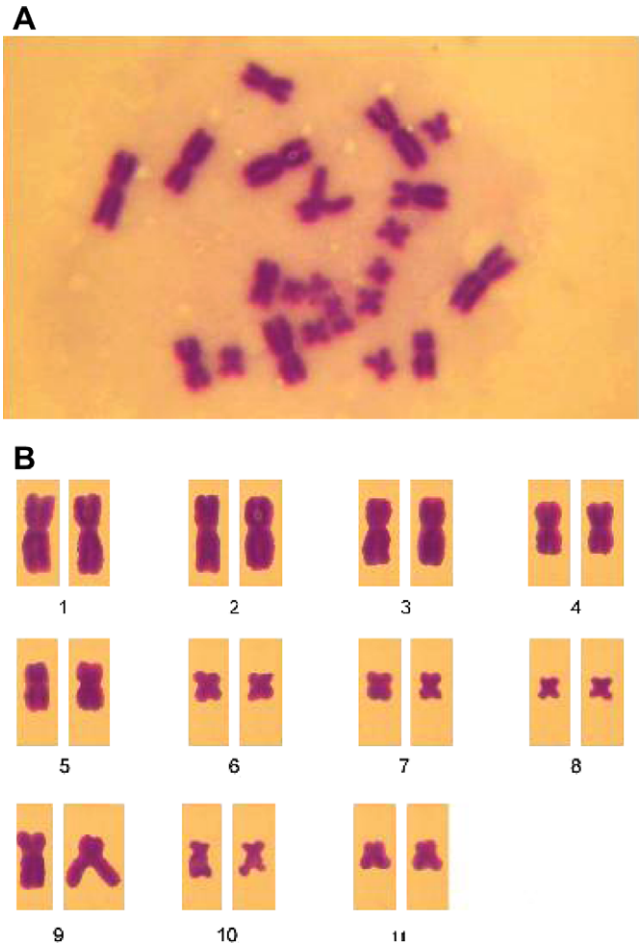

Figure 2 (A) Photomicrograph of metaphase spreading from female *B. dhufarensis*. (B) Karyotype of female *B. dhufarensis*.

Table 1 Arm ratios and type of centromeres of *B. dhufarensis*.

Chrom. no.	Short arm *p*	Long arm *q*	Total length *q* + *p*	Arm ratio *q*/*p*	Type of centromere
1	4.36	5.23	9.59	1.2	M
2	4.36	4.8	9.16	1.1	M
3	3.49	3.92	7.41	1.1	M
4	3.05	3.05	6.1	1.0	M
5	2.18	2.62	4.80	1.2	M
6	1.31	1.74	3.05	1.3	M
7	1.31	1.31	2.62	1	M
8	0.87	0.87	1.74	1	M
9	2.18	4.36	6.54	2	SM
10	1.31	2.62	3.93	2	SM
11	0.87	2.18	3.05	2.5	SM

The submetacentric chromosomes are classified according to the length to two types:

1. Chromosome 9 is medium size chromosome.
2. Chromosomes 10–11 are small size chromosomes.

The 10th pair of this karyotype has a secondary constriction on its long arms and could be considered as a marker