Pakistan J. Sci. Ind. Res., Vol. 30, No. 11, November 1987

FATTY ACID COMPONENTS OF *BUTHUS SINDICUS* (SCORPION)

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(Received July 19, 1987)

Fatty acid components of lipid contents of *Buthus sindicus* (Scorpion) have been characterized by mass spectrometry and GCMS techniques during prehibernation period (July-Oct.) and their fragmentation pattern has been discussed.

Key words: Fatty acids, *Buthus sindicus*, GCMS

INTRODUCTION

The living animal cell is a complex energy matter nexus, which plays a vital role in the normal organomechanical functioning. In this connection particular mention could be made of hibernating animals. Hibernation is a physiological adaptation markedly linked with changes in the distribution of lipid in body tissues [1,3]. Since the energy requirement of the hibernating animal is believed to be met mostly by the body fat [4,5]. It was considered of interest to identify the fatty acids, components of lipid contents [6,7] via mass spectrometry that has long been used as a unique tool both for skeletal assignments and for recognition and characterization of natural products. A number of reports are available on the mass fragmentation pattern of saturated and unsaturated fatty acids [8,12].

In the present preliminary study, the component fatty acids of total lipid contents of *Buthus sindicus*, a scorpion commonly found in tropical countries, have been characterized through mass spectrometry and GCMS technique.

EXPERIMENTAL

Scorpions collected from subarban area of Karachi were exhaustively extracted with hexane in a Soxhlet apparatus for two days. The hexane extract was shaken out with 90% methanol to remove the steroidal compounds. The hexane-phase was washed with water dried with anhydrous Na_2SO_4 and freed of the solvent under reduced pressure. The residue (7.9% of the total weight of scorpion) thus obtained was refluxed with 5% methanolic KOH and shaken out with ethyl acetate to remove the saponifiable matter. The lower alkaline phase was acidified and free fatty acids were extracted out with ethyl acetate. After usual workup, the residue was esterified with methanol in presence of H_2SO_4. Methyl esters of scorpion fatty acids were analysed through GCMS on a Varian Model 3700 capillary gas chromatograph attached with a MAT 112 mass spectrometer connected to PDP 11/34 computer system.

RESULTS AND DISCUSSION

The GCMS spectrum showed 14 molecular ion peaks, 11 of which were saturated, 2 mono-unsaturated and 1di-unsaturated methyl esters. These results and characteristic mass fragments observed in mass spectra are given in Table 1. The diagnostic peaks observed in the case of saturated fatty acid esters were molecular ion peak (M^+), M^+-31 resulting from the loss of methoxy group, M^+-43 and M^+-59 arising from the loss of methoxy group and two hydrocarbon units ($2CH_2$). In methyl esters of mono-unsaturated and di-unsaturated fatty acids the diagnostic

Table 1. Mass spectral data for fatty acid esters of total lipid contents of *Buthus sindicus*
m/z (rel. intes. %)

M^+	M^+ - 31	M^+ - 43	M^+ - 59	M^+ - 74	Fatty acid
130(8)	99(10)	87(25)	71(50)	–	Hexanoic
158(7)	127(6)	115(22)	99(18)	–	Octanoic
186(6)	155(6)	143(13)	127(8)	–	Decanoic
214(12)	183(8)	171(5)	155(10)	–	Dodecanoic
242(6)	211(9)	199(6)	183(10)	–	Tetradecanoic
270(10)	239(6)	227(18)	211(12)	–	Hexadecanoic
294(5)	263(8)	–	–	220(5)	Octadecadienoic
296(2)	265(10)	–	–	222(9)	Octadecenoic
298(10)	267(12)	255(9)	239(6)	–	Octadecanoic
326(14)	295(3)	283(6)	267(5)	–	Eicosanoic
352(2)	221(5)	–	–	278(4)	Docosenoic
354(4)	323(10)	311(1)	295(3)	–	Docosanoic
396(2)	365(5)	353(4)	337(1)	–	Pentacosanoic
424(1)	393(4)	381(2)	365(1)	–	Heptacosanoic

mass fragments were M^+-31 and M^+-74. These findings are consistent with those observed earlier [7]. Studies in hibernating and post hibernating animals would provide an insight into the physiological behaviour and lipid-energy relationship. The study is in progress and will be reported later.

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