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## **MYCO AND MICROFLORA OF THE NASAL CAVITY OF APPARENTLY HEALTHY CAMELS** (With 3 Tables)

By  
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الفحص البكتريولوجي والفطري لمسحات الأنف في الجمال السليمة اكلينيكيًا

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فحصت عدد ٦٠ مسحة أنف من جمال سليمة اكلينيكيًا وتم عزل ١١ عترة بكتيرية وثمانية عترات فطرية  
وقد نوقشت النتائج في ضوء تأثير هذه العترات على إمكانية إصابة الجمال بالالتهابات النفية.

### **SUMMARY**

A total of 60 nasal swabs of apparently healthy camels were collected for bacteriological and mycological studies.

The results revealed the isolation of 11 pathogenic and Potentially pathogenic bacterial isolates as follows:

Staph. albus, Diplococcus pneumonia, Enterobacter, Klebsiella aerogenes, E.Coli, Serratia-marcesens, Providencia sp., Citrobacter, Strept. pyogens, Corynebacteria sp. and Micrococcus sp.

The mycological examination revealed the isolation of 8 species of fungi as follows: Asp. niger, Asp. flavus, Asp. nodulans, Asp. Fumigalus, Penicillium sp., Dematiaceae sp., Candida albicans and Thinoscleromitis.

### **INTRODUCTION**

Camel is a very important animal in Egypt and other Countries in Africa and Asia. It has a great economical values among our farm animals, where in Egypt, camel

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meat constitutes an important source of animal protein, as well as, the wool production constitutes an important product of camels. Working in Agriculture field or emigration between the villages is the main function for these animals for most Egyptian farmer.

The establishment of the respiratory tract infection in camels were the aim of many workers. Many pathogenic and Potentially pathogenic bacteria were recovered from the apparently healthy animals.

MERCHANT and PCKER (1957) and CRUICKSHANK (1962) mentioned that *Klebsiella* species affects animals as well as, humanbeing. Most members of Genus *Klebsiella* in the opinion of that author are commensal in respiratory tract.

ARORA and KALRA (1973) isolated *Klebsiella* Pneumonia from cases of broncho-pneumonia in camels.

SHIGIDI (1973) isolated and identified from nasal swabs, Lungs and bronchial lymph nodes of 64 apparently healthy camels bacilli in 26.2% diphtheroides 15.9%, corynbacterium Pyogenes 5.4% Alphahaemolytic streptococci 5.1%, E.Coli 1% and Enterobacteraerogenes 0.5%.

ABU.EL-SOUOD (1974); BAILY and SCOTT (1974); WOLF, et al. (1975); EL-ALLAWY, et al. (1977); GHAWI (1978); CARTER (1979); REEM, et al. (1984); and ZAITOUN (1986) could isolate different strains of bacteria and fungus from the Upper and Lower respiratory tract of camels and another species of animals.

This work was carried out to estimate the possible bacterial and fungal flora that could inhabit the nostrils of apparently healthy camels under Assiut circumstances, furthermore the inter relationship between these isolated microorganisms was also evaluated.

## **MATERIAL and METHODS**

A sum of 60 sterile nasal swabs were collected from 60 apparently healthy camels for both bacteriological and Mycological examination.

### **For bacteriological examinations:**

The swabs were carried on nutrient broth and kept in the incubator for 24 hr. at 37°C. The broth cultures were used for further bacteriological investigation by inoculation in nutrient agar, blood agar and MacConkeys agar media. The inoculated plates were incubated at 37°C for 24-48 hr.



## MYCO AND MICROFLORA OF CAMELS

### For mycological examinations

The obtained swabs were directly streaked on Sabouraud's dextrose agar medium containing penicillin, Streptomycin and Chloramphenicol.

Inoculated plates were incubated for 48 hr. at 37°C, then left at room temperature for another week.

The obtained bacterial and fungi isolates were identified according to BAILY and SCOTT (1974); CRUICKSHANK, et al. (1975) and MERCHANT and PACKER (1967) and COLES (1986).

## RESULTS

A total of 11 bacterial isolates and 8 Species of Fungi were recovered from examined camels (Table I).

From table (II) it is clearly evident that from 11 cases different bacterial isolates were identified. *Staph-albus* and *Serratia marcescens* were the most prevalent bacteria (Six cases). While from three cases, *Klebsiella aerogenes* and *Providencia* sp. were identified, *Diplococcus Pneumonia*, *E.Coli*, *Coryne-pyogenes*, *Micrococcus*, *Enterobacter*, *Citrobacter* and *Strepto. Pyogens*, were additional bacterial flora that could be isolated from examined cases.

Nasal mycoflora could not be isolated separately but in conjunction with bacterial flora (Table III).

A sum of 8 different species of Mycoflora were identified from 49 mixed cases. *Penicillium* spp. and *Asp. niger* were the most common fungal isolates (each of them was identified in (11 cases), followed by *Asp. Flavous* (8 cases), *Asp. nodulans* (7 cases). *Candida albicans* (6 cases), *Dematiaceae* sp. (3 cases). While *Asp. Fumigatus* and *Tinoscleromitis* were isolated from three mixed cases.

## DISCUSSION

From the present results it is clearly evident the several types of both Pathogenic and Potentially pathogenic micro and mycoflora were isolated from nasal swabs of apparently healthy camels.

The present results were coincide with those of AROA and KLARA (1973) isolated *Klebsiella* sp. and *diplococci* sp. from cases of bronchopneumonia in camels. BAILY

NAWAL GOBRIAL et al.

and SCOTT (1974) mentioned that *Klebsiella* and *Pseudomonas* were found in the Upper and lower respiratory tract of various species of animals. SHIGIDI (1973) isolated several microorganisms from nasal swabs, Lung bronchial lymph nodes of apparently healthy camels.

These microorganisms included diphtheroid 15.9% *Corynebacterium pyogens* 5.4% Alpha haemolytic strepto coccus 5.1% *E.Coli*. 1% and *Enterobacter aerogenes* 0.5% WOLF, et al. (1975) mentioned that *E.Coli*, *Klebsiella*, *Proteus* sp., *Pseudomonas aerogenos* and Coagulase positive *Staphylococci* were the pathogenic microorganisms frequently encountered in Upper respiratory tract. Similar results were also recorded by GHAWI (1978) who isolated *Staph. aureus* and *Klebsiella* sp. from Pneumonic camels lung.

The present results are more or less agree with that reported by REEM, 1984 who isolated *Staph aureus* 64.5%, *Strept. Pyogen* 9.7%, *faecalis* 51.6%, *Strept. pyogen* 9.7%, *Pnemococci* 23.8%, *E.Coli* 45.2%, *Klebsiella* 3.2% and *Serratia marcesens* 12.5% from the of apparently healthy camels.

It was clear that the respiratory tract of apparently normal animals acts a reservoir for many species of microorganisms.

These microorganism reached the nasal cavity and subsequently the respiratory system either through inhalation or during drinking polluted water. Stress factors such as changes in the hygienic, environmental and climatic conditions play a role in the onset of pneumonia (BUXTON and FRASER, 1977). Such factors would lower the resistance of the lung tissue and the exsisting organism most probable would get the Upper hand.

From the epizootological and epidemiological and potentially pathogenic fungi recovered from the nasal cavity of apparently healthy camels were *Asp. niger*, *Asp. flavus*, *Asp. nodulans*, *Asp. Fumigalus*, *Penicillium* sp., *Dematacia* sp., *Candida albicanis* and *Thinoscleromitis*. These results were in agreement with many authors SHIGIDI 1973; MAZEN, et al. 1984 and ZAITOUN (1986). All of them could isolated various species of *asperegillus* and *Pencillium* sp. from different species of farm animals.

From table (III) it is clearly evident that the most of isolated fungi were correlated with more than one type of isolated bacteria. These results coincided with those of MOUBASHER and MOUSTAFA (1974); EDWARDS and EL-ZUBAIDY (1977) and ZAITOUN (1986) who mentioned that mycological infection may be concomitant with other infection e.g. bacteria, Viral and Parasites.

Lastly the present study cleared out the possible pathogenic and potentially pathogenic micro and mycoflora of the nasal cavity of apparently healthy camels.



## MYCO AND MICROFLORA OF CAMELS

## REFERENCES

- Abu-El-Souod, S.M. (1974): Studies on fungus-airspora in Egypt. Ph.D. thesis, Bot., Faculty of Science, Assiut University, Egypt.
- Arora, R.G. and Kalra, D.S. (1973): A note on isolation of *Klebsiella pneumoniae* and diplococci from cases of bronchopneumonia in camels. *Indian Journal of animal science*. 43 (12): 1095-1096.
- Bailey, W.R. and Scott, E.G. (1974): *Diagnostic Microbiology. A text book for the isolation and identification of pathogenic micro-organisms* 4th Ed., the C.V. Mosby Company, Saint Louis.
- Baxton, and Fraser, G. (1977): *Animal Microbiology*. Black well Scientific publication Oxford, London.
- Carter, G.R. (1979): *Diagnostic procedures in Veterinary Bacteriology and Mycology*. Third edition, Charles Thomas. Publisher Springfield. Illinois. U.S.A.
- Coles, E.H. (1986): *Veterinary clinical pathology*. 4th Ed. W.B. Saunders Company Philadelphia, London.
- Cruickshank, R. (1962): *Makie and Macartney, "Hand Book of Bacteriology"* 10th Ed. Livingstone Ltd. Edinburgh and London.
- Cruickshank, R.; Duguid, J.P.; Marmion, B.P. and Swain, R.H.A. (1975): *Medical Microbiology*. 12th Ed. Vol. II, Churchill Livingstone Edinburgh London and New York.
- El-Allawy, T.T.; Atia, M. and Amer, A.A. (1977): Bacterial flora of the pharyngeotonsillar portion of clinically healthy Donkeys. *Assiut Veterinary Medical Journal* Vol. 4, No. 7.
- Edwards, J.H. and El-Zubaidy, T.S. (1977): *Medical aspects of Aspergillus*, Smith, J.E. and Pateinan, J.A. (Edits). Academic press, London, New York, San Francisco.
- Ghawi, A.M. (1978): Public health importance of camel lung affections. M.V.Sc. Thesis, Fac. of Vet. Med., Cairo Univ.
- Mazen, M.B.; El-Kady, I.A.; Amer, A.A. and Elyas, A.H. (1984): The mycoflora of clinical positive pneumonic cases of buffalo calves. *Assiut Vet. Med. J.*, 11 (22): 61-66.
- Merchant, A.I. and Packer, A.R. (1957): *Veterinary Bacteriology and Virology*. 5th Ed. Iowa State College Press, Ames, Iowa.
- Moubasher, A.H. and Moustafa, A.F. (1974): Air-borne fungi at Assiut, Egypt. *J. Bot.*, 17: 135-149.
- Reem M. Dosoky and Laila S. Ahmed (1984): Bacteriological studies on the Microflora of nasal cavity of different Farm Animals with special reference to the environmental condition. First scientific congress, Fac. Vet. Med., Assiut Univ., Assiut Vet. Med. J., Vol. 13, No. 25.
- Shigidi, M.A. (1973): Aerobic microflora of respiratory tract of Camels. *Sudan of Vet. Science and animal husbandry* 14, g.

NAWAL GOBRIAL et al.

- Wolf, P.L.; Russell, B. and Shimoda, A. (1975): Practical clinical Microbiology and Mycology: Techniques and Interpretations. A Wiley Biomedical-Health publication. John Wiley and Sons New York, London, Sydney, Toronto.
- Zaitoun, A.M. (1986): Studies on Pathogenic Bacteria and Fungi in Lung of Camels infested with Echinococcosis in Upper Egypt For the degree of M.V.Sc. Veterinary Medicine Department, Fac. of Vet. Med., Assiut University.

Table (I): Type of bacterial flora and Mycoflora isolated from nasal cavity of 60 apparantly healthy camels.

Isolated bacteria	Isolated fungi
Staph. albus	Asp. niger Asp. flavus
Diplococcus pneumonia	Asp. nodulans
Enterobacter	Asp. fumigalus
Klebsiella aerogenes	Penicillium spp.
E. Coli	Dematacia spp.
Serratia marcesens	Candida albiconig
Providencia	Thinoscleromitis
Citrobacter	
Strepto pyogens	
Corynebacterium sp.	
Micrococcus sp.	

Table (II): Types of bacteria isolated separatly from nasal cavity of apparantly healthy camels.

Microoganisms	No. infected animals
Diplococcus Preumonia-Staphalbas	2
Klebsiella aerogenes-Proviroleucia sp.	3
Staph. albus-Serratimarcesens.	6

Table (III): Types and numbers of bacteria and fungus isolated from nasal cavity of apparantly healthy camels.

Isolated bacteria	Isolated fungi	No. of Cases
Staph albus + Klebsilla aerogenose	Penicillium spp.	5
Diplococcus pneumonia + staph. albus	Asp. nodulans	7
Klebs-aerogenose + Staph.albus E.Coli	Asp. niger	3
Staph. albus + Citrobacter + E.Coli	Candida olbears	4
Micrococcus + enterobacter	Asp. flavus	3
Serratia marcesens	Asp. flavus	5
Staph.albus + serrati marc.+ E..Coli	Penicillium spp.	6