

# الآية

قال تعالى :

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أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ  
زَرْعًا مُخْتَلِفًا أَلْوَانُهُ ثُمَّ يَهِيَجُ فُتْرَاهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطَامًا إِنَّ فِي ذَلِكَ  
لَذِكْرًا لِّأُولِي الْأَلْبَابِ (21) أَفَمَنْ شَرَحَ اللَّهُ صَدْرَهُ لِلْإِسْلَامِ فَهُوَ عَلَى نُومٍ مِنْ  
رَّبِّهِ فَوَيْلٌ لِلْقَاسِيَةِ قُلُوبُهُمْ مِنْ ذِكْرِ اللَّهِ أُولَئِكَ فِي ضَلَالٍ مُبِينٍ (22)

صدق الله العظيم

سورة الزمر الآية (21-22)

## *DEDICATION*

*To my parents who have supported me all the way since the beginning of my studies.*

*To my sisters and brothers especially my brother Ahmed Hassan who has been a great source of motivation and inspiration.*

*Finally, to all those who believe in the richness of learning*

*Aesha*

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## **Abstract**

This study was conducted in Khartoum state during the period from May to October 2011 to investigate the cytomorphological changes in buccal and urinary tracts cells of fuel station workers. Buccal and urine samples were collected from 100 male workers, selected randomly as case group. In addition fifty individuals not working in fuel stations were selected as control. The age of all participants ranged from 15 to 50 years with mean age of 32 year. Children below 15 years old were not encountered in this study.

Smears from buccal cells and urine sediments were prepared and stained with Papanicolaou stain. The results of urine cytological changes showed that more than half of case group (54%) had no changes in their urine cytology. Acute inflammatory changes indicated by presence of RBCs and polymorphonuclear neutrophils were observed in 27% of cases while chronic inflammatory changes, seen as infiltration of mononuclear cells (macrophages and lymphocyte), were observed in 16% and dyskaryotic cells were only seen in three percentage of cases. Control group showed no cytological changes in 86% of participants while acute and chronic inflammatory changes were observed in 10% and four percentage of the participants, respectively. No dyskaryotic changes were seen in controls. The differences in urine cytology between the cases and the controls are significant

The buccal cytological results showed that 50% of the case group had no changes in their buccal cytology. Acute and chronic inflammatory changes, similar to those previously mentioned in urine cytology, were observed in 28% and, 15% of the cases respectively. Dyskaryotic cells were seen in six percentage and changes indicative of HPV (e. g. Koilocytosis, nuclear chromatin condensation) were seen in

only one case . On the other hand , control group showed no cytological changes in 92%of participants, while acute and chronic inflammatory changes were seen in only six and two percentage of the controls respectively. The differences between the cases and control were highly significant .

The study revealed a significant relation between buccal and urine cytological results and the awareness of workers about occupational risk, smoking habit and duration of employment. However no significant correlation was found between working load per day and buccal cytological changes. More obvious changes were seen in workers not aware of benzene exposure; those are more apt to develop chronic inflammatory reactions and dyskariosis .

## ملخص الدراسة

أجريت هذه الدراسة في ولاية الخرطوم في الفترة من مايو حتى أكتوبر 2011. لمعرفة النمط الشكلي الخلوي في مخاطية الفم و الجهاز البولي لعمال محطات الوقود.

تم جمع عينات من مخاطية الفم و عينات البول من 100 عامل خدمة مباشرة في محطات الوقود، جميعهم من الذكور تم اختيارهم عشوائيا إضافة الى 50 من الأفراد الذين لا يعملون في محطات الوقود كعينة ضابطة. تراوحت أعمار مجتمع الدراسة من 15-50 سنة بمتوسط 32 سنة.

تم تحضير وصبغ مسحات مخاطية باطن الفم و راسب (ثقاله ) البول بصبغة بابانيكولا. لم يكن هناك أي تغير خلوي في مسحات راسب البول في 54% من عمال محطات الوقود في حين انه لوحظ وجود تغيرات التهابية حاده تميزت بوجود الخلايا الحمراء والخلايا العدله في 27% من الحالات كما لوحظ وجود تغيرات التهابية مزمنة تميزت بوجود خلايا احادية النواة (البلاعم الكبيرة والخلايا اللمفاوية) في 16% من الحالات و خلايا السوي نووية في 3% من الحالات. لم يلحظ تغيرات خلوية في 86% من عينات مجموعة الضبط في حين لوحظ وجود تغيرات التهابية حادة ومزمنة في 10% و 4% من العينات على التوالي وغياب خلايا السوي نووية كانت الفروقات في نتائج العينات المأخوذة من عمال الوقود ومجموعة الضبط ذات اهمية احصائية.

لم يلاحظ أي تغير خلوي في العينات التي اخذت من مخاطية الفم في 50% من الحالات في حين لوحظ وجود تغيرات التهابية حاده ومزمنة (كالتى سبق ذكرها) في 28% و 15% من الحالات على التوالي وشوهدت خلايا السوي نووية في 6% من الحالات وكذلك تغيرات داله على وجود فيروس الورم الحليمي الحميد في حالة واحدة (تقعر الخلايا وكثافة كروماتين النواة ) وبالمقابل لم تكن هناك أي تغيرات خلويه في العينات المأخوذة من 92% من مجموعة الضبط ولكن شوهدت تغيرات التهابية حادة ومزمنة في 6% و 2% فقط من هذه المجموعة على التوالي . وكان الفرق في النتائج مابين الحالات ومجموعة الضبط ذات اهمية احصائية . خلصت الدراسة الى ان خلايا مخاطية الفم وخلايا الجهاز البولي حساسة لمفعول الوقود خاصة في حالات التعرض لفترات طويلة والتي تمهد لحدوث الالتهابات.

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## List of abbreviations

IARC	International Agency for Research on Cancer
LpG	liquefied petroleum gas
Ag NORs	Argyrophilic Nucleolar Organizer Regions
AML	Acute Myeloid Leukemia
MDS	Myelodysplastic Syndrome
ALL	Acute Lymphoblastic Leukemia
CML	chronic myeloid leukemia
ANLL	Acute Non-Lymphocytic Leukemia
OSHA	Occupational Safety and Health Administration
CNS	Central Nervous System
HPV	Human Papilloma Virus

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