

الآية

قال تعالى

(قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا

مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ

الْحَكِيمُ (32))

الله العظيم
البقرة

صدق
سورة

Dedication

I dedicate this work to solo of

My father

To her, the source of smile of my life, she does a lot
of

Thing for me to be a good person

My Mother

To my Brother and Sisters who have been sincerely
supporting me

To so in the realm of education and research

To him, the source of light in the darkness of life

My Fiancé

Finally, I am of course thank full to my friends for their
support.

Best regards for all

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List of Abbreviations

NM	Nuclear Medicine
QA	Quality assurance
Who	Health office
PMT	Photo multiplier tube
SNR	Signal noise ratio
PHA	Pulse height analyzer
QC	Quality control
UFOV	Useful field of view
CFOV	Central field of view
FWHM	Full width at half maximum
KeV	Kilo electron voltage
COR	Centre of Rotation
SPECT	Single photon emission computer tomography
NMDC	Neelain Medical Diagnostic Centre
FOV	Field of view

Abstract

This study was performed to evaluate the gamma camera machine performance in nuclear medicine at Alneelain Medical Center (NMDC) for the following parameters: Energy Resolution, Uniformity, center of rotation and sensitivity by using ^{99m}Tc . We found about the center of rotation, the deviation of gantry rotation (0.1 mm) ,and the average deviation could be as 0.14 mm. such deviation is within the tolerance level of gamma camera performance, and this period the gantry rotation started

to deviate from the normal at 90° to reach about 0.4 mm at 135° i.e. at the 3rd. quadrant and by 180° the deviation approaching to 0.8 mm. and from 180 up to 360° the deviation fluctuated between 1.0 to 1.3 mm which is still within the tolerance level of system working. The results reveal that the energy resolution showed a central peak of energy at 140 KVp and the limit of the window for the energy about 7.5% (± 10.5). The average of FWHM was about 10.35 and the stander deviation was about 2.6 which were all within the standard levels. Also the result showed that the Differential Uniformity UFOV, CFOV in the practical about 2.78%, 2.04% which were within the acceptable limit, as well as Integral Uniformity, UFOV, and CFOV in the practical about 5.07%, 3.1%.

Also the result showed that The Average of sensitivity around 77.23 and the drop of peak of the sensitivity according to the leakage of the current and the decay

.of the end of the below carve according to the dead time

ملخص البحث

تمت هذه الدراسة لتقييم اداء جهاز القاما كاميرا في وحدة الطب النووي في مركز النيلين-
التخصصي وفقا للمتغيرات الاتيه: نقطه الدوران, حدية الطاقة,التجانس ,الحساسيه.

لقد وجد ان محور الدوران و الانحراف في محور الدوران حوالي ١.مم و متوسط الانحرافات يجب ان يكون ١٤.٠ مم بعض الانحرافات تكون في المدي المسموح به بالنسبه لجهاز القاما كاميرا, والانحراف في محور الدوران يبدأ عند الزاويه ٩٠ حتي يصل الي حوالي ٤.٠ مم عند الزاويه ١٣٥ و الانحراف عند الزاويه ١٨٠ يصل الي ٨.٠ مم ومن ١٨٠ الي ٣٦٠ يكون الانحراف ما بين ١ مم الي ٣.١ مم مما يعني انها في المدي المسموح به لتشغيل النظام .

وايضا النتائج توضح ان حدية الطاقة توضح متوسط الطاقة ١٤٠ كيلو فولت وحدود الطاقة عباره عن ٥.٧% (+٥.١٠). ومتوسط عرض نصف الحزمة حوالي ٣٥.١٠ والانحراف المعياري حوالي ٦.٢ مما يعني انها في المدي المسموح به.

ايضاء النتائج توضح ان التفاضل التجانس لل UFOV, CFOV عمليا تساوي ٠.٤٢%, ٧٨.٢% علي التوالي مما يعني- انها في المدي المسموح به. بالاضافه للتكامل التجانسي- لل UFOV, CFOV ١.٣%, ٠.٧٥% علي التوالي.

وايضا النتائج توضح ان متوسط الحساسيه حوالي ٢٣.٧٧ وانحدار القمه للحساسيه ناتج من انقطاع التيار والاضمحلال في نهايه المنحني ناتج من الزمن المتبقي

