Dedication

I dedicate this work to

My mother, father, brothers, Sister, Friends and my lovely child (Mohammed)
Acknowledgements

Thank God for giving me the strength, patience and guidance to go through Reference articles to solve many problems regarding the completion of this research project.

First of all I would like to express my deepest gratitude to Dr. Elmugdad Ahmed Ali for Supporting and helping me by valuable and critical ideas. I can’t forget his fruitful comments by focusing on important points throughout my project.

My appreciations go further deep to all teaching and laboratory staff in chemistry department just for cooperation and good advices till completed my research.
Abstract (English)

The crude sodium chloride in Sudanese market’s is highly contaminated with undesirable contaminants which make it un conformative with the international standards for table salt.

Random samples were collected from the market and were analysed. The result revealed high contamination with $\text{SO}_4^{2-}$, $\text{Ca}^{2+}$, $\text{Mg}^{2+}$, and the moisture content was also found to be high, in addition to insoluble matter.

To get rid of these contaminants the crude salt was washed by brine solution which dissolves the contaminants, but not the sodium chloride. As a result the percentages of impurities were lowered ie. $\text{SO}_4^{2-}$ from 0.5 % to 0.3 % and $\text{Ca}^{2+}$ from 0.28% to 0.12% and $\text{Mg}^{2+}$ from 0.52% to 0.21%. Matter insoluble from 1. 30 % to 0.01% this resulted is increasing the percentage of sodium chloride 96.5% to 99.1% this simple economical method produced table salt which satisfies the requirements of the standards.
ملخص البحث

ملح الطعام الخم المتواجد في الأسواق السودانية ملوث إلى درجة كبيرة بملوثات غير مرغوب فيها مما يجعل خواصه لا تتطابق مع المواصفات العالمية لملح الطعام. اختبرت عينات بطريقة عشوائية من السوق ثم تحليلها. وكشف التحليل أن العينات فيها نسبة عالية من الملوثات مثل Ca²⁺, Mg²⁺, SO₄²⁻، وأيضاً نسبة الرطوبة كانت عالية بالإضافة لبعض العناصر غير الذايدة.

للتخلص من هذه الملوثات غسل الملح بمحلول من ملح الطعام النقى المشبع والذي يذيب الشوائب ولا يذيب ملح الطعام. نتيجة لذلك انخفض تركيز الملوثات مثل أيون الكبريتات انخفض من 0.5% إلى 0.3% و أيون الكالسيوم من 0.28% إلى 0.12% و أيون الماغنزيوم من 0.52% إلى 0.21% و أدى ذلك إلى زيادة نسبة كلوريد الصوديوم من 96.1% إلى 99.1% وبهذه الطريقة الاقتصادية البسيطة تم إنتاج كلوريد الصوديوم تطابق مواصفات مع متطلبات المواصفات القياسية.
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<td>B.C.</td>
<td>Before Christ</td>
</tr>
<tr>
<td>A.D.</td>
<td>Is short for anno domini which means the “year of our lord”</td>
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<tr>
<td>ASTM international</td>
<td>American society for testing and materials</td>
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<td>IMO</td>
<td>International maritime organization</td>
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