DETECATION

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ABSTRACT

Twenty gum samples from *Acacia sengal* var. *senegal* were collected from seven locations within the Sudan gum belt with different soil types and seasons. The locations are AL-Nihud, AL-Obied, AL-Deain and Nyala, which represented the sandy soil areas whereas Abojebaha, AL-Gadaref and Upper Nile, represent the clay soil areas of the belt.

The Physicochemical analysis carried out included moiture content, optical rotation, intrinsic viscosity, protein content, pH value, acid equivalent weight and ash content were done. The results shows a range of the physicochemical properties varied according to the soil types. Sand soil areas gave moisture contents ranging from 10.15% to 14.89%, specific optical rotation from -27.64 to -30.14, intrinsic viscosity from 16.64 ml/g^{-1} to 22.74 ml/g^{-1}, protein content from 1.73% to 2.24%, pH value from 4.3 to 4.44, acid equivalent weight from 1133.8 to 1291.5 and ash content from 3.15% to 3.75%. While the clay soil areas gave moisture contents ranging from 9.70% to 12.20% , specific optical rotation from 28.38 to -30.61, intrinsic viscosity from 16.29 ml/g^{-1} to 19.77 ml/g^{-1}, protein content from 1.68% to 2.05%, pH value from 4.22 to 4.36, acid equivalent weight from 1237.8 to 1328.5 and ash content from 3.04% to 3.97%.

The gum samples have been fractionated to determine the molecular weight and molecular mass distribution which reflects the functionality of the gum. The molecular weight of the samples from the sandy soil fall in the range from 5.40×10^5 to 1.44×10^6 with an AGP molecular weight from 2.68×10^6 to 6.15×10^6 and AGP% in range from 6.53% to 20.14%. In the same context molecular weight of the samples obtained from the clay soil ranged from 3.43×10^5 to 6.07×10^5 with an AGP molecular weight ranging from 1.91×10^6 to 2.69×10^6 and AGP% from 3.21% to 11.45%.

Emulsion properties of the gum samples were also evaluated by measuring the droplet size. 70% of the samples had good emulsion properties. However, in the present study it has been found that 78% of these good emulsifier samples were obtained from the locations characterized by sand soil , only one sample (5%) showed fair emulsion properties, whereas, 5 samples representing 25% showed poor emulsion properties.

ملخص الأطروحة

جمعت عشرون عينة من الأكاشيا سنغال صنف السنغال (صمغ الهشاب) من سبعة مواقع داخل حزام الصمغ العربي في السودان، ومن أنواع مختلفة من التربة والمواسم. المواقع هي النهود و الأبيض و الضعين ونيالا ، والتي تمثل مناطق التربة الرملية في حين أن مناطق أبوجبيهة و القضارف وأعالي النيل ، تمثل التربة الطينية في الحزام.

تم تحليل الصفات الفيزوكيماوية وهي تتضمن محتوى الرطوبة، الدوران الضوئي النوعي و اللزوجة الجوهرية ، ومحتوى البروتين و الرقم الهيدروجيني والوزن المكافئ للحمض و الرماد. أظهرت النتائج مدى من الخصائص الفيزيائية والكيميائية المختلفة للعينات وفقا لأنواع التربة. أظهرت المناطق ذات التربة الرملية رطوبة نسبية تراوحت بين 10.15 ٪ الى 14.89 ٪ ، الدوران الضوئي النوعي من -27.64 إلى -30.14 ، اللزوجة الجوهرية من 16.64 مل/جرام $^{-1}$ إلى 22.74 مل/جرام $^{-1}$ ، والمحتوى البروتيني من 1.73% إلى 2.24 %، الرقم الهيدروجيني من 4.3 إلى 4.44 ، ,الوزن المكافئ للحمض من 1133.8 إلي 1291.5 والرماد من 3.15% إلي3.75% في حين أن المناطق الطينية أعطت رطوبة نسبية تراوحت من 9.7 % الي 12.20 % ، الدوران الضوئي النوعي من 28.38 إلى -30.61 ، اللزوجة الجوهرية من 16.29 مل/جرام$^{-1}$ إلى 19.77 مل/جرام $^{-1}$، ومحتوى البروتين من 1.68% إلى 2.05%، الرقم الهيدروجيني ، من 4.22 الى 4.36 ، الوزن المكافئ للحمض من 1237.8 الي 1328.5 والرماد من3.04% إلي3.97%.

تمت تجزئة عينات الصمغ لتحديد الوزن الجزيئي وتوزيع الكتلة الجزيئية التي تعكس وظائف الصمغ. الوزن الجزيئي للعينات من التربة الرملية تقع في نطاق يتراوح من 5.40 × 10^5 و 1.44 × 10^6 و الوزن الجزيئي للارابينوجلاكتان بروتين بين 2.68 × 10^6 الي 6.15 × 10^6 ونسبة الارابينوجلاكتان بروتين من 6.53 ٪ إلى 20.14 ٪. وفي نفس السياق الوزن الجزيئي للعينات التي

تم الحصول عليها من التربة الطينية تراوحت بين3.43×10^5 إلى 6.07×10^5 و الوزن الجزيئي للارابينوجلاكتان بروتين من 1.91×10^6 إلى 2.69×10^6 ونسبة الارابينوجلاكتان بروتين من 3.21 ٪ إلى 11.45 ٪.

أختبرت خصائص الاستحلاب لعينات الصمغ عن طريق قياس حجم القطيرات. واظهرت النتائج ان 70 ٪ من عينات الصمغ تمتاز بخصائص استحلاب جيدة بينما اظهرت عينة واحدة فقط (5 ٪) خاصية استحلاب متوسطة ، بينما ، 5 عينات تمثل 25 ٪ ضعيفة الاستحلاب،وقد وجد في هذه الدراسة بأن 78 ٪ من العينات ذات الاستحلاب الجيد قد تم الحصول عليها من المواقع التي تمتاز بالتربة الرملية.