



# ***Abstract***

The physiochemical properties of *Acacia Senegal* and *Acacia nubica* (new name *A. oerfota*) gums were studied. They include; moisture, ash, nitrogen hence the protein, solubility test, tannin content, total soluble fiber, intrinsic viscosity, specific optical rotation, the pH value, acid equivalent weight and accordingly the uronic acid. The molecular weight of the samples was estimated using osmotic pressure measurement.

The value of number average molecular weight ( $M_n$ ) of *A. nubica* was found to be 4.4. The high molecular weight and, high water solubility suggest a highly branched structure; (the molecular weight of *A. senegal* is 2.2).

The cationic composition of *Acacia nubica* was determined and the result showed that Calcium was the most abundant cation in the samples (17.691 ppm) followed by Potassium (10.917 ppm), Magnesium (6.099 ppm), Sodium (5.818 ppm), Manganese ( 0.161 ppm), Lead (0.0883 ppm), Iron (0.0752ppm), and Copper ( 0.0135ppm).

Emulsification studies show that *Acacia* gums (*A. nubica*, *A. senegal*) possess good emulsifying activities and stability, however the emulsifying stability of the emulsion of *nubica* gum is less than that of *A. senegal* gum. Blends of *Acacia nubica* with *Acacia senegal* were investigated and it was found that a mixture containing 50% *A. nubica*: 50% *A. senegal* produced blends having better emulsifying stability compared to other blends of gums.

## المُلخَص

تم في هذه الأطروحة دراسه الخواص الفيزيوكيميائيه لصبغي اللعوت والهشاب وتم تحديد محتوى كل من الرطوبه, الرماد, النتروجين, ومن ثم البروتين كما تم تحديد محتوى التانين, الذوبانيه, الالياف الذائبه, للزوجه الضمنيه, الدوران النوعي, والوزن المكافئ ومن ثم حمض اليورانيك وتم حساب الوزن الجزئي عن طريق قياسات الضغط الازموزي للاصماغ.

لقد وُجد ان صبغ اللعوت يمتاز بوزن جزئي ( ) أعلى من صبغ الهشاب ( ) ونتيجه للوزن الجزئي العالي والذوبانيه العاليه يستنتج ان صبغ اللعوت اكثر تفرعا من صبغ الهشاب.

تحليل الايونات المعدنيه لصبغ اللعوت بين أن الصمغ عباره عن معقد لأملح الكالسيوم (ppm 17.917), البوتاسيوم (ppm 10.917), الماغنسيوم (ppm 6.099), الصوديوم (ppm 5.818) ونسب ضيله من المنجنيز (ppm 0.161) والرصاص (ppm 0.0883) والحديد (ppm 0.0752) ثم النحاس (ppm 0.0135). أظهرت دراسه الاستحلاب أن مستحلبات صبغ الهشاب أعلي ثباتا من مستحلبات صبغ اللعوت, وقد تبين من نتيجه خلط صبغ اللعوت والهشاب أن مزيجا يحتوي علي 50% من اللعوت و 50% من صبغ الهشاب قد أنتج مستحلبا يتميز بدرجة ثبات أعلي من بقيه الخلائط الاخرى .

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