



# Acute Renal Attack After Treatment with Carapa Procera Oil: Two Cases at the Ziguinchor Peace Hospital (Senegal West Africa) and Review of the Literature

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## Summary

We describe two cases of impaired secondary renal function to a Carapa Procera taking as part of traditional treatment in Ziguinchor, southern Senegal. The certain or suspected toxicity of Carapa Procera is little known in the literature. In the two reported observations, no cause but the traditional treatment was found to explain the clinical picture presented. The development was favourable in all cases after medical treatment and a few hemodialysis sessions. We insist on the difficult context of investigation of these accidents, on the medical ignorance of these practices in sub-Saharan Africa and in Senegal in particular, as well as on the necessary collaboration with local botanists knowledgeable in traditional medicine.

**Keywords:** Carapa procera; Kidney attack; Casamance

## Introduction

According to the World Health Organization (WHO), in some developing countries in Asia, Africa and Latin America, 80% of the population uses phytotherapy especially in rural areas due to the accessibility of this type of treatment at affordable cost and above all because of lack of access to modern medicine for these populations [1,2]. An early diagnosis allows the prevention of possible complications, in particular renal. In developing countries, the use of herbal remedies is very widespread in the poorest communities especially for reasons related to spiritual beliefs, the need of protection, sexual power or fertility and especially a poor access to medical care [3,4]. Acute renal failure of toxic origin and, in particular, when it is due to herbal medicine is often undiscovered. The incidence of acute renal failure induced by herbal medicines is unclear as the majority of cases are unreported, just as the mortality rate is unknown. The TOULOUCOUNA is a fruit tree with very fragrant flowers, the Carapa Procera by its botanical name, from the Meliaceae family, present in West Africa, in Casamance in southern Senegal but also in Angola, and in Cameroon. Long used

in cosmetology for local use, this product is a therapeutic wonder in Casamance with the consumption of oil by the oral route. We present two observations of impaired renal function following the consumption of Carapa procera oil in two patients belonging to the same family hospitalized in the emergency department of the peace hospital of Ziguinchor.

## Clinical Observations

### Patient n° 1

Mrs. J.S, 62 years old staying in Ziguinchor without any particular history with a standard assessment (hemogram, fasting blood sugar, creatininaemia, blood urea) carried out as part of her annual assessment, dating from 2 normal months. She consults for repeated insidious vomiting, of progressive onset accompanied by epigastralgia, and followed two days later by disturbances of consciousness such as clouding. Clinical examination showed normal blood pressure and stage II coma with no evidence of neurological localization with Kussmaul dyspnea. The diuresis is

kept and the temperature is normal. The biological assessment revealed a renal function impairment with a creatinine level at 196.5 mg / l and blood urea at 3.65 g / l. At the hemogram, the hemoglobin level is normal at 12.4 g / dl, the calcemia is normal. The blood ionogram performed in the good conditions shows hyperkalemia at 5.9 mmol / l, there was no dysnatremia. Objective ultrasound of the kidneys and urinary tract of normal sized kidneys well differentiated without dilation of the pyelo-caliceal cavities. Renal biopsy puncture is not available. The family admits taking poison 48 hours before hospitalization by excessive consumption of Carapa oil will prevent it. Given clinical and paraclinical arguments, the diagnosis of toxic acute renal failure (ARF) was accepted. 1.4% sodium bicarbonate medical treatment and an insulin protocol were started urgently. Then the patient underwent 4 conventional hemodialysis sessions including 2 successive sessions and 2 others spaced 48 hours apart. The evolution was marked by an improvement in consciousness and digestive signs after 2 days. The renal control function performed after 3 weeks had shown a complete remission with serum creatinine at 12 mg/l and blood urea at 0.38 g/l. The patient continues her follow-ups in nephrological consultation.

### Patient n° 2

Mr I. M, 35 years old, from Dakar, son of Mrs. J.S, with a history of chronic headache followed in the neurology department of the Fann university hospital center also had a normal biological assessment carried out 1 month before his admission. Mr I. M decided to go to Casamance (a city where herbal medicine occupies a very important place in therapy), for a traditional treatment because the family, in particular the mother Mrs. J.S was convinced that given the persistence of headache, treatment was needed other than Medicine modern. He was admitted to the emergency department on the same day like his mother for vomiting and intoxication. The diuresis is preserved. He also admits taking Carapa oil procera at the same time as his mother that a healer had prescribed them. Biological examination showed impaired renal function with serum creatinine at 120 mg / l and blood urea at 2.02 g / l the blood ionogram returned to normal. There was no anemia or dyscalcemia. The renal ultrasound shows kidneys of preserved size with good cortico-medullary differentiation without dilation of the pyelo-caliceal cavities. Upper digestive fibroscopy reveals multiple ulcers measuring 2 to 4 mm at the level of the pre-pyloric antrum probably related to toxicity. The diagnosis of an ARI of toxic origin is retained. He received medical treatment based on parenteral rehydration, omeprazol 40 mg per day. In the absence of complications, dialysis was not offered. the evolution was favorable under medical treatment with disappearance of signs and normalization of renal function after 20 days of medical treatment.

### Discussion

Traditional medicine also called complementary medicine or alternative medicine is widely used up to 80% by the population in developing countries for primary health care unlike developed countries where this therapy is used mainly for preventive or palliative care [5].

However, this therapy is responsible for several complications that can be life-threatening, particularly in the renal area. Acute renal failure (ARF) linked to herbal medicine represents 35% in Africa and remains under-diagnosed due to the lack of appropriate diagnostic means, the absence of case notification, the absence of patient reporting to the clinical ... [1-5].

### This acute renal damage is favored by several factors including the fact that

- These unconventional preparations rarely meet the essential standards required for consistency in composition and biological activity; [6]
- These herbal preparations can be contaminated with pesticides and heavy metals;
- An error in the identification of plants can also occur; [7]
- Interaction with a drug administered to the patient concomitantly; [1]
- An association with an unidentified plant species. [7]

Traditional remedies have rarely been analysed and we know little about their nephrotoxicity, however some studies have made it possible to elucidate this phenomenon and these reports of renal damage induced by phototherapy can result either from a direct nephrotoxicity of the product, which may be increased by underlying predisposing conditions such as dehydration from either indirect nephrotoxicity or kidney damage is an indirect consequence of this product or through interaction with another drug. [8]

This nephrotoxicity can manifest itself by all forms of renal damage ranging from pre-renal AK to obstructive AK but also hydro-electrolytic disorders.

Pre-renal involvement is found in 26.9% [9] and is represented by functional AKI which can result from dehydration caused by vomiting, which is found in the majority of series and represents 51.5% in a South African study [8] and are found in our patient or diarrhea related to the ingestion of this herbal medicine [8] .

Organic renal involvement can affect all tunics, but tubulointerstitial involvement is the most common. Acute tubular necrosis accounts for 26.9% [8] of toxic origin or complicating functional ARI, as was probably the case in our patients, remains the most common disease. Alongside we can find acute interstitial nephritis, papillary necrosis, cortical necrosis [6]. Ionic disorders are very common, dominated by hyperkalemia, as was the case in our patient [9].

For acute renal post-renal failure, kidney stones are classically described as a potential cause, for example an observation has been reported in a patient who had consumed the star fruit which is a source of oxalate [10].The evolution of renal involvement is most often formidable with a high mortality of around 45.5%, especially in Africa [6] linked to complications of renal failure and the non-availability always of extra-renal purification means. Sometimes the

evolution can be favourable with or without extra-renal purification with recovery of renal function after a few weeks as was the case in several observations [10] and in our patients.

## Conclusion

The myth of the safety of herbal remedies must be challenged. The information must concern the medical community and the general population. In developing countries, where the majority of the population does not have access to health care, it would be of great interest to continue the inventory of medicinal plants and to assess their activity on the kidneys.

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