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Research Article

# CA19-9 Lowering Effect of Ayurvedic Mineral Complex in the Patients of Chronic Pancreatitis

**Vaidya Balendu Prakash[1]*, Vaidya Shikha Prakash[2], Shakshi Sharma[2], Sneha Tiwari[1] and Vaidya Pooja Jaryal[2]**

*[1]VCPC Research Foundation, Uttarakhand, India*

*[2]Padaav-Speciality Ayurvedic Treatment Centre, Uttarakhand, India*

***Corresponding Author:** Vaidya Balendu Prakash, VCPC Research Foundation, Uttarakhand, India.

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## Abstract

CA19-9 is a carbohydrate antigen used as a cancer marker in pancreatic cancer. CA19-9 levels are found to be elevated in patients of pancreatic cancer along with some other gastrointestinal carcinomas. Recent studies also indicate etiological role of this antigen in pancreatitis and pancreatic cancer. The marker is widely used as an indicator to assess the efficacy of treatments given in pancreatic cancer and decreasing levels do indicate a good prognosis. However, there are no reports on auto-regression of CA19-9 levels in patients of pancreatitis or pancreatic cancer. An Ayurvedic Mineral Complex (AMC) has been found effective in lowering CA19-9 levels in Pancreatitis patients from the very beginning of the treatment. This observation can open a new thrust area for research to develop this formulation as a preventive therapy for pancreatic cancer in patients suffering from Pancreatitis. Here we report the observations made in 43 pancreatitis patients, with elevated CA 19-9 levels, who were treated using AMC.

***Keywords:*** *Pancreatic Cancer; Pancreatitis; CA19-9; Marker; Prevention*

## Introduction

Pancreatitis is a progressive inflammatory disorder of the pancreas usually characterized by recurrent episodes of abdominal pain, nausea, vomiting with exocrine and endocrine dysfunction [1]. Patients suffering from inflammatory condition of the pancreas, both recurrent and chronic, are considered to be at a high risk to develop pancreatic cancer (2.7 to 16.5 fold) [2]. This risk is highest in the case of hereditary pancreatitis (up to 55%) [3]. Also, chronic pancreatitis is known to promote mutant Kras-mediated development of pancreatic cancer in experimental models [4].

CA19-9 is a known serological marker to assess progression of pancreatic cancer. It is widely used in both, diagnosis and follow-up of pancreatic cancer. Overall sensitivity of the assay is 80% with 90% specificity in diagnosis of pancreatic cancer using cut off level of 37 U/mL [5]. While normal levels are those below 37 U/mL, levels more than 300 U/mL are considered definite indicators of pancreatic cancer [6,7]. Findings from a recent study also implicate CA 19-9 in the etiology of pancreatitis and pancreatic cancer and the need to explore it as a therapeutic target in the treatment of pancreatic disorders [8]. There is no available information regarding the auto decrease of CA19-9 levels. The levels are known to decrease in cancer patients who have undergone surgery or chemotherapy and are suggestive of a good prognosis [9,10].

AMC has been showing significant effect in reducing intensity and frequency of attacks in patients suffering from different variants of pancreatitis [11,12]. The compound has also shown pancreatitis protective properties in experimental studies [13]. Here, we present the findings of an observation on 43 patients with established diagnosis of Pancreatitis who had elevated CA19-9 levels (> 37 U/mL).

## Methodology

The enrolled patients were diagnosed for different variants of Pancreatitis by expert gastroenterologists using modern diagnostic tools (Figure 1). These patients were in the age group of 6 to 67 years (mean age = 30 years) with 34 males and 9 females. They had a history of Pancreatitis ranging from 1 month to 14 years with a mean of about 4.5 years. All of them had elevated levels of Serum CA 19-9 (> 37 U/mL). They were prescribed AMC at a dose of 3 - 4 mg/kg body weight along with a 1600-1800 calorie balanced daily diet, a regulated lifestyle and moderate rest. Ayurvedic treatment for Pancreatitis is a one year long protocol. These patients were asked to get Serum CA19-9 levels checked periodically.

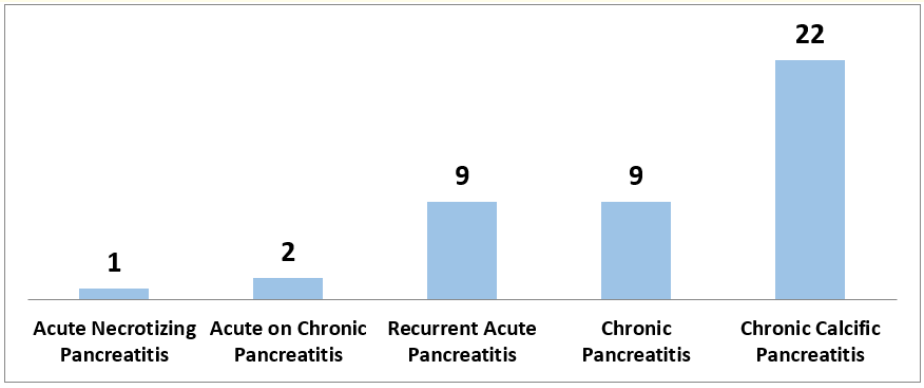


***Figure 1:*** *Different variants of pancreatitis diagnosed (n = 43).*

## Results

An analysis of periodical results of CA19-9 showed a lowering trend after the commencement of treatment (Figure 2). Detailed sheet with CA19-9 levels of these patients is shown in table 1. The levels were seen to decrease in all patients with time. One patient (number 43) showed increase at Day 120 as compared to Day 0 when the level was at borderline. The patient is under treatment and continuous follow up.

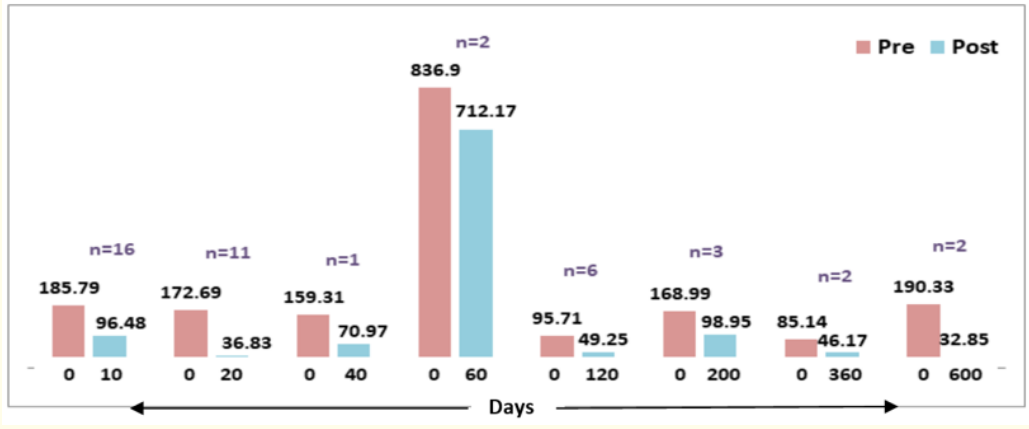


***Figure 2:*** *Lowering effect on CA19-9 levels; compared using mean levels for all days at initial and final points (n = 43).*

| Pt. No. | Age | Sex | Days | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0 | 10 | 20 | 30 | 40 | 60 | 120 | 200 | 360 | 480 | 600 |
| 1 | 19 | M | 157.94 | 40.2 | 33.55 | | | | | | | | |
| 2 | 32 | M | 75.19 | | 14.07 | | | | | | | | |
| 3 | 18 | F | 55.07 | 65.6 | 50.88 | 37.9 | | | 47.22 | | | | |
| 4 | 38 | M | 123.36 | 28.5 | | | | | | | | | |
| 5 | 21 | M | 87.27 | | 37.41 | | | | | | | | |
| 6 | 28 | M | 85.84 | 50.2 | 39.62 | | | | | | | | |
| 7 | 47 | M | 633.3 | 93.8 | 86.36 | | | | | | | | |
| 8 | 52 | M | 48.85 | 30.4 | | | | | | | | | |
| 9 | 6 | F | 71.46 | 35.3 | | | | | | | | | |
| 10 | 23 | M | 136.03 | | 33.34 | | | | | | | | |
| 11 | 19 | M | 213.22 | 27.8 | | | | | | | | | |
| 12 | 23 | F | 473.8 | 458 | | 398.4 | | 394.24 | | | | | |
| 13 | 38 | M | 102.79 | 83.2 | 87.52 | | | 67.23 | | 45.3 | | | |
| 14 | 28 | M | 53.89 | | | | | | 42.89 | | | | |
| 15 | 27 | M | 114.93 | 13.8 | | | | | | | | | |
| 16 | 36 | M | 49.91 | 39.3 | | | | | 28.19 | | | | |
| 17 | 32 | M | 136.58 | 45.8 | | | | | | | | | |
| 18 | 38 | M | 242.76 | 66.7 | | | | | | | | | |
| 19 | 67 | M | 348.15 | | 188.02 | | | | | 202.88 | | | |
| 20 | 29 | M | 109.6 | | | | 253.81 | 160.21 | 47.2 | | | | |
| 21 | 26 | M | 70.84 | 21.7 | | | | | | | | | |
| 22 | 10 | M | 80.78 | | 37.21 | | | | | | | | |
| 23 | 22 | M | 55.75 | 4.87 | | | | | | | | | |
| 24 | 32 | M | 240.65 | 106 | 18.89 | | | | | | | | |
| 25 | 25 | M | 328.52 | | | | | | | | | | 34.8 |
| 26 | 24 | M | 287.03 | | 13.8 | | | | | | | | |
| 27 | 23 | M | 73.73 | 18.9 | | | | | | | | | |
| 28 | 19 | M | 56.05 | | | | | | | 48.69 | | | |
| 29 | 26 | F | 318.41 | 38.2 | | | | | | | | | |
| 30 | 27 | M | 104.42 | 103 | | | | | | | 53.8 | | |
| 31 | 33 | M | 59.23 | 52.8 | | | | | | | | | |
| 32 | 50 | F | 1234.4 | 1060 | | | | | | | | | |
| 33 | 46 | M | 52.14 | | 14.23 | | | | | | | 63.1 | 30.9 |
| 34 | 46 | M | 65.86 | | | | | | | | 38.55 | | |
| 35 | 30 | M | 39.11 | 56.5 | 26.38 | | | | | | | | |
| 36 | 32 | F | 159.31 | 284 | 182.88 | | 70.97 | | | | | | |
| 37 | 16 | F | 76.53 | 54.9 | 64.5 | | | | | | | | |
| 38 | 53 | M | 1200 | 1098 | 4293.10 | 2764 | 1439.2 | 1030.1 | | | | | |
| 39 | 29 | M | 39.78 | 16 | | | | | | | | | |
| 40 | 27 | F | 114.82 | 22.5 | | | | | | | | | |
| 41 | 17 | M | 54.6 | 60.3 | | | | | | | | | |
| 42 | 31 | M | 268.96 | 225 | | | | 140.53 | 70.1 | | | | |
| 43 | 10 | F | 36.85 | | | | | | 59.9 | | | | |

***Table 1:*** *Individual CA19-9 levels of patients (n = 43).*

## Discussion

CA19-9 is embarked as a biomarker for keeping a check on progression or regression of pancreatic diseases [9]. It is more used in the evaluation of the success or failure of any therapy in curbing or treating pancreatic cancer. Increase in CA 19-9 levels is considered to be a sign of disease progression while decreasing levels indicate regression of cancer following the therapy. Although levels more than 300 U/mL are considered indicative of pancreatic cancer, 37 U/mL is the normal cut off value [6,7]. This may imply that all the patients in this study were at a high risk for developing pancreatic cancer. Chemotherapy and radiation therapy is known to lower the levels in cancer patients. Post-operative decreases in CA 19-9 levels in patients with pancreatic tumors and masses have also been reported. However, there are no reports on auto lowering of CA19-9 levels to normal limit.

AMC has been bringing complete and sustainable relief in patients suffering from Pancreatitis and is also able to cease disease progression in treated cases [11,12]. The formulation also exhibits pancreatitis protective properties and is absolutely safe [13]. CA 19-9 lowering effect is a recently made observation using AMC in Pancreatitis patients.

Though the number of patients in the study is small and the study is retrospective, preliminary trend does indicate that AMC could be explored further for its CA 19-9 lowering properties by designing prospective controlled studies in experimental and clinical models.

## Conclusion

The findings of the study indicate the CA19-9 lowering property of AMC. Further research could be carried to develop AMC as a preventive model for pancreatic cancer in pancreatitis patients.

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## Conflict of Interest

Authors declare no conflict of interest.

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