Evaluation of Curcumin (turmeric extract) effect on prevention of contrast induced nephropathy in patient under elective coronary angiography

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Outline:

❖Introduction

1. importance of CIN
2. purpose of study

❖Material &method

- Design of study
- Patient selection

1. Inclusion criteria
2. Exclusion criteria

- Procedure

1. Curcumin administration
2. outcome

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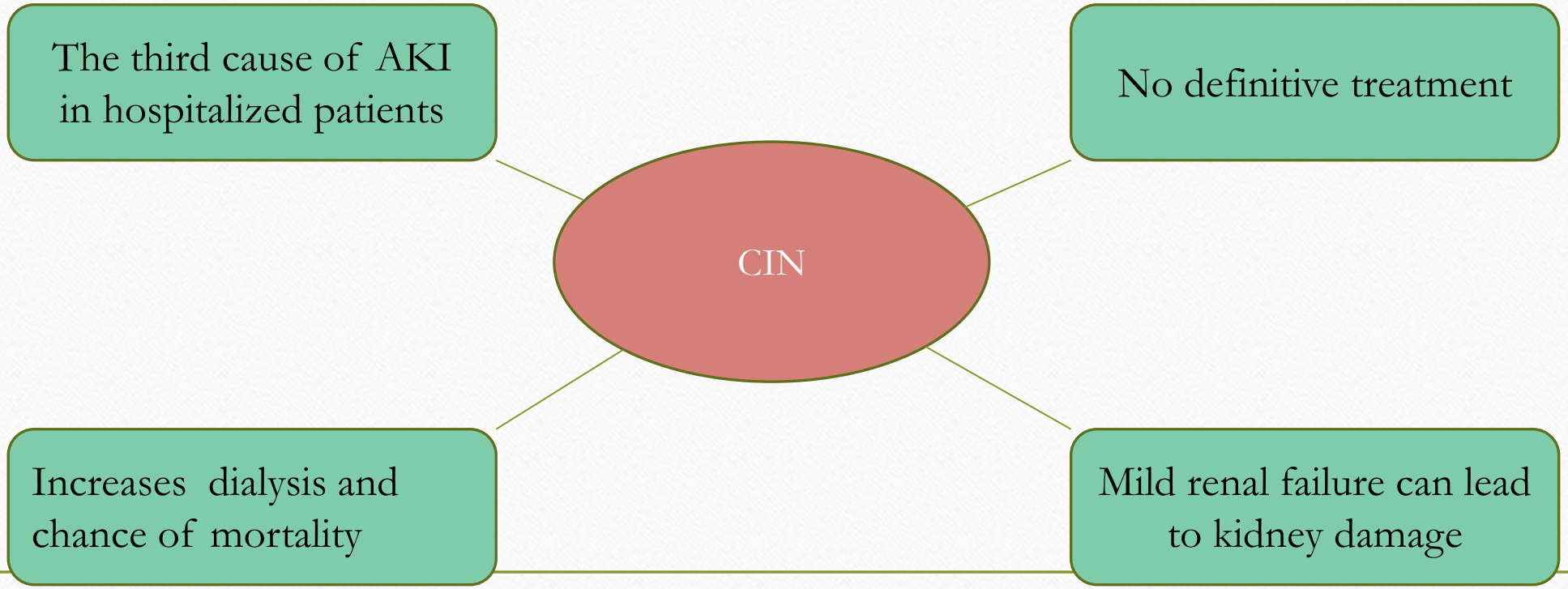
Introduction

- The importance of contrast induced nephropathy

- The purpose of the study

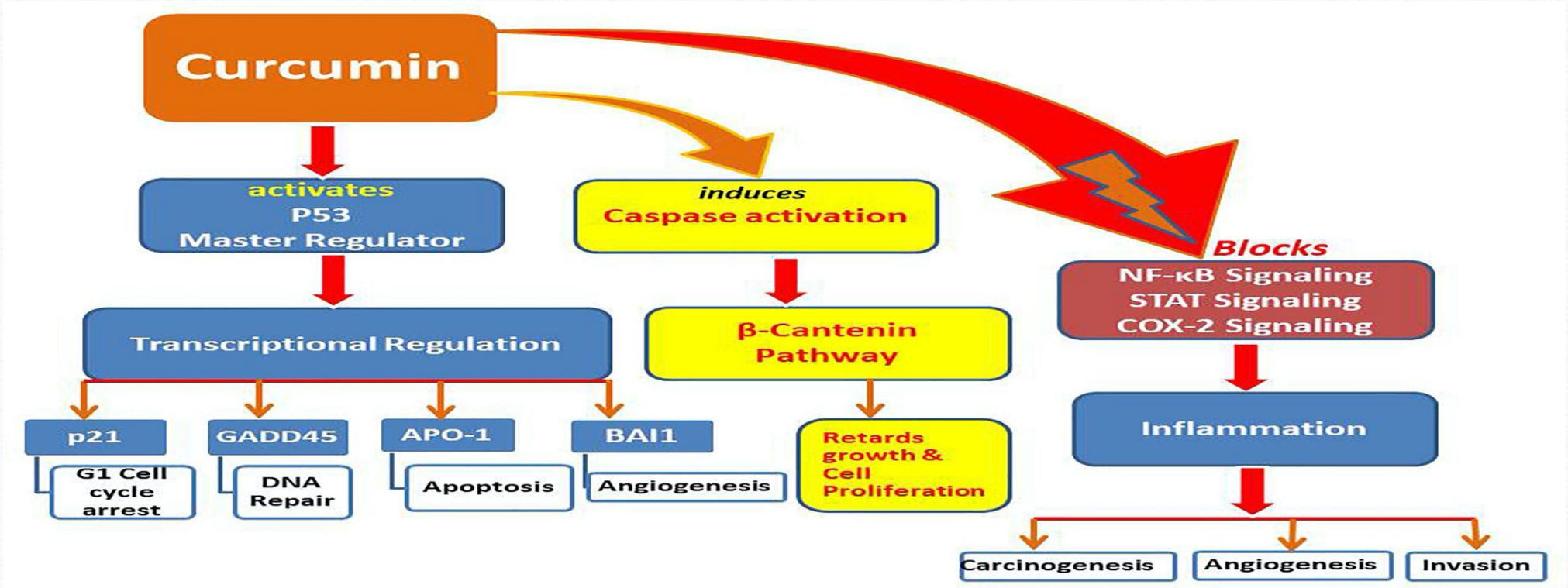
Importance of contrast induced nephropathy



Importance of contrast induced nephropathy

- Isotonic fluid injection is the only effective method for preventing CIN
- Not universally agreement about Protective effects of the proposed drugs
- Require effective CIN prevention method.
- A number of herbal medicines have their renal protective effects.

Importance of contrast induced nephropathy (curcumin effect)



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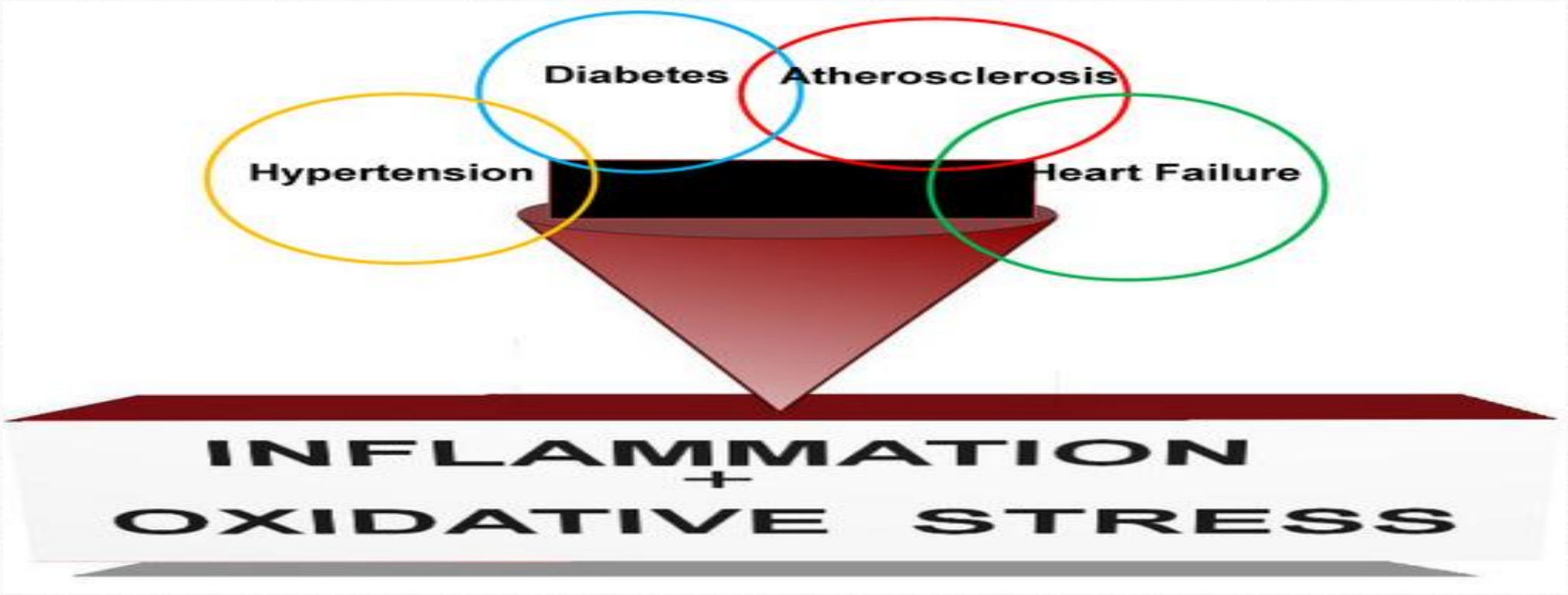
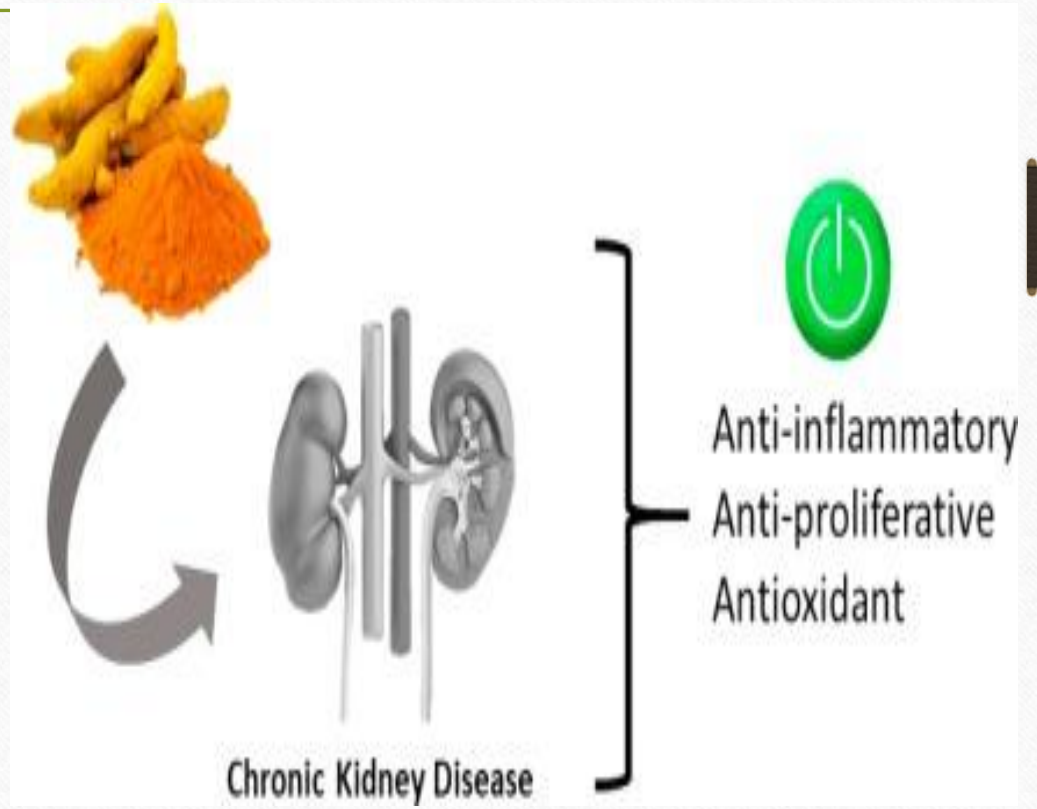
Importance of contrast induced nephropathy (curcumin effect)



Importance of contrast induced nephropathy (curcumin effect)



Purpose of the study

- Assessment of protective effects of turmeric-derived curcumin on contrast-induced nephropathy in patients undergoing selective coronary angiography

Material &method

- Design of study
- Patient selection

1. Inclusion criteria
2. Exclusion criteria

- Procedure

1. Curcumin administration
2. Primary outcomes
3. Secendory outcomes

Design of study

(Randomized double-blinded, placebo-controlled clinical trial)

CKD patients with chronic stable angina & candidates for elective coronary angiography referred to Taleghani Hospital

(144 eligible patienets)

Excluded (n=12)
- Not meeting inclusion criteria (n=8)
- Declined to participate (n=4)
- Other reasons (n=0)

Randomized (n=132)

A curcumin

B placebo

Allocation

Allocated to intervention (n=66)
- Received allocated intervention (n=66)
- Did not receive allocated intervention (give reasons) (n=0)

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Patients selection

- *Inclusion criteria:*
- 1.Candidate for elective coronary artery catheterization (equal to or above 18 years of age);
- 2. Clearance Cr <60 ml / min (stage 3 or 4 CKD)

Patients selection(*Exclusion criteria)*

- Unstable Angina or recent myocardial infarction
- Need for urgent angiography; cardiac arrhythmias; acute or decompensated heart failure
- Intravenous contrast infusion in the past ten days
- Malignancy
- Pregnancy
- Acute renal failure, or recent creatinine changes greater than 0.3 mg/dl
- Patients in chronic dialysis
- Patients with a history of allergy to contrast agents and turmeric
- Patients who are not satisfied with entering a research job
- Use of nephrotoxic agents in the last week, including aminoglycosides, vancomycin

Method

- Measurment of serum creatinine: 12 hours before and 24 and 48 hours after intervention in Taleghani Hospital's lab.
- eGFRby the Cockroft-cault formula
- Contrast Type and volume implemented recorded (dose : 30 -40 ml)
- Catheterization was done a Cardiologist
- Drug and placebo : packaged by a fellow of the Faculty of herbal Medicine in the form of similar capsules

Method

NAC 2400 mg24h before contrast

NAC 2400mg 24h after contrast

Hydration 12 hours before contrast

Hydration 12 hours after contrast

24h

24h

48h

A group: turmeric extract 500 mg capsules , single dose every 12 hours from 24 hours before the intervention to 48 hours later (total 3g)

B group: Placebo, in the same form and size as the original drug, at the same time

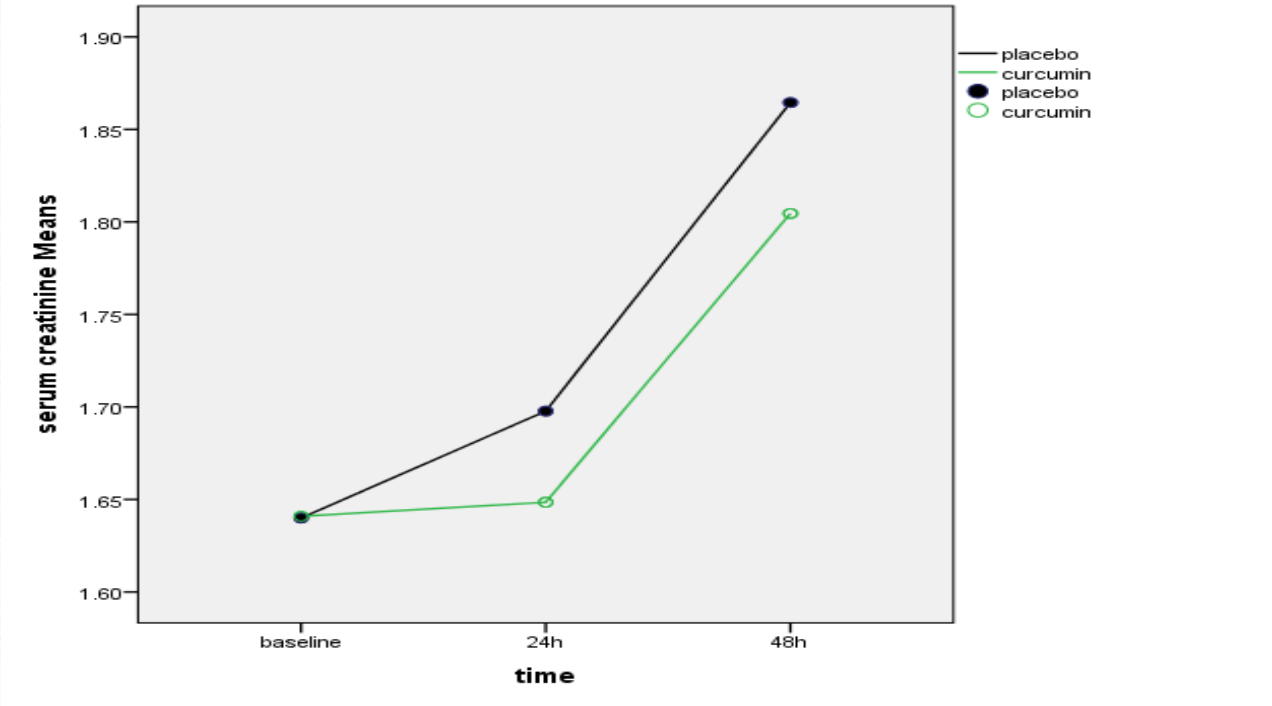
Outcomes

- **Primary**:
- 1- Change in serum creatinine level after 48 hours of contrast administration
- 2- Contrast induced nephropathy (CIN) (increased creatinine serum equal to or greater than 0.5 mg / dl or more than 25% relative to baseline creatinine, 48 hours after contrast administration).
- **Secondary**:
- 1. eGFR changes 48 hours after contrast injection

Results
Demographic and Base line laboratory data

	Total	Placebo (n=62)	Curcumin (n=66)	P value
male/female	78 (69.9%)/50(39.1%)	36 (58.1%)/26 (41.9%)	42 (63.3%)/24 (36.4%)	0.52ٱ
diabetic	57 (44.5%)	30 (48.4%)	27(51.6%)	0.72ٱ
Age	71.56±9.43	72.37±8.67	70.83±10.11	0.35*
Baseline Cr (mg/dl)	1.64±0.30	1.64±0.36	1.64±0.23	0.98*
Baseline eGFR (ml/min)	41.76±12.12	41.81±14.38	41.73±9.85	0.97*

Results



Serum creatinine changes in two groups

Results

Incidence of contrast-induced nephropathy

Incidence of CIN	Curcumin group	Placebo group	P value
27.3%	22.7%	32.3%	0.151

Results

Change of serum creatinine level among the study groups

	Total	Placebo (n=62)	Curcumin (n=66)	P value
Baseline Cr (mg/dl)	1.64±0.30	1.64±0.36	1.64±0.23	0.98*
24h Cr mg/dl)	1.67±0.34	1.69±0.40	1.64±0.27	0.41*
48 h Cr (mg/dl)	1.83±0.52	1.86±0.61	1.80±0.42	0.52*
48h Cr change (mg/dl)	0.19±0.31	0.22±0.33	0.16±0.29	0.28*

Results

Change of eGFR among the study groups

	Total	Placebo	Curcumin	P value
Baseline eGFR(cc/ml)	41.76 ±12.12	41.81± 14.38	41.73 ±9.85	0.97
24h eGFR(cc/ml)	41.16±12.09	40.19±13.70	42.00± 10.53	0.41
48h eGFR(cc/ml)	38.76± 12.56	38.22±15.05	39.24±10.00	0.66

Results

- **Diabetic patients' subgroup:**
- There was no significant difference regarding CIN in diabetic patients between placebo and curcumin group, 30.0% (OR=0.62, CI95=0.39-0.98) and 21.1% (OR=2.13, CI95%=0.77-5.90), respectively, P=0.11.

Conclusion

- curcumin reduced the incidence of CIN, this difference was not statistically significant.
- Like other antioxidant substances, curcumin can reduce apoptosis and oxidative stress at cellular level, but it does not produce more protective effects than hydration with normal saline.

Recommendation

- Further studies with larger sample size
- long-term follow up
- Using higher dosage of this drug

Thank you

Results

	OR	95% CI for OR	P
Age	0.95	0.95-0.99	0.036
Gender, female versus male	1.26	0.55-2.86	0.57
FBS	0.99	0.98-1.00	0.32
Treatment, curcumin versus placebo	0.62	0.28-1.35	0.23
OR-odds ratio, CI=confidence interval, FBS=fasting blood sugar			