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**Effect of nettle plant extract on the overconsumption diminution of zinc as sacrificial metal during cementation of copper**

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**Highlights**

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Nettle extract improves copper recovery and zinc overconsumption diminution during cementation.

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Use of natural product by replacing other common toxic organic additives.

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This extract attenuates notably the reduction of hydrogen and dissolved oxygen reactions.

**Abstract**

In this work, we study the cementation reaction of copper by zinc in acid sulphate media in the presence of nettle plant extract (*Urtica dioica* L.). The effect of some parameters, namely concentration of nettle extract, temperature and initial copper ions concentration have been studied. This extract obtained by refluxed technique in water, has proved to be a good inhibitor of the parasitic reactions of hydrogen and dissolved oxygen that accompanied the cementation process in acidic media. These reactions are the main causes of the zinc overconsumption and the decrease of copper recovery efficiency. The results showed that the maximum of copper recovery efficiency (85.2%) was obtained at the optimal concentration of nettle extract, equal to 1.5 g·L−1. At this concentration, we recorded a decrease in zinc overconsumption of about 43.5% compared to the solution without additives. The rate of the cementation reaction increases with increasing temperature up to 37 °C and this effect is more pronounced when the extract is present in solution.

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**Keywords**

Cementation

Nettle plant extract

Copper

Zinc

Inhibitor

Zinc overconsumption

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