

# 3<sup>RD</sup> WORLD BIOTECHNOLOGY CONGRESS

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## Calcium carbonate from bacteria isolated from soils

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Ureolytic bacteria are microorganisms found in soils and in presence of urea and calcium they can produce calcium carbonate, a process known as microbiologically induced calcium precipitation (MICP). Twenty-five bacterial strains with urease activity were isolated from the garden, agricultural and stables soils. The three best strains were evaluated (8H, 9H and 13H) and of these 9H was selected due to the higher urease activity and calcium carbonate production. Molecular characterization showed that the chosen bacteria corresponded to *Sporosarcina pasteurii* with a similarity of 99%. Bacteria growth conditions were optimized. Culture media, other carbon sources addition, calcium chloride and urea concentration. The nutrient broth was the best media, followed by yeast extract and finally the tryptone, with CaCO<sub>3</sub> yields of 99.7%, 85.5% and 76.2%, respectively. The cost of the media at the laboratory level was established, verifying that the most economical media was nutrient broth. Of the additional carbon sources, sucrose, then glycerol and finally glucose stood out, with yields of 99.5%, 96.9% and 95.8%, respectively. When comparing these yields with those provided only with the nutritive broth, it was concluded that there are no significant differences and the addition of one of these would imply an increase in the costs of the media. Urea and calcium chloride optimum concentration was 5g/L. XDR results showed calcite (12.5%) and vaterite (87.5%).

### Biography

Sandra Patricia Chaparro Acuna is in third year of her PhD studies in Chemistry Sciences. She has published more than 15 papers in some journals. She is currently working at Pedagogical and Technological University of Colombia at Colombia..

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